

**The Oregon Administrative Rules contain OARs filed through January 12,
2001**

DEPARTMENT OF ENVIRONMENTAL QUALITY

WATER POLLUTION

DIVISION 41

**STATE-WIDE WATER QUALITY MANAGEMENT PLAN;
BENEFICIAL USES, POLICIES, STANDARDS, AND TREATMENT CRITERIA
FOR OREGON**

340-041-0006

Definitions

Definitions applicable to all basins unless context requires otherwise:

- (1) "BOD" means 5-day 20°C. Biochemical Oxygen Demand.
- (2) "DEQ" or "Department" means the Oregon State Department of Environmental Quality.
- (3) "DO" means dissolved oxygen.
- (4) "EQC" or "Commission" means the Oregon State Environmental Quality Commission.
- (5) "Estuarine Waters" means all mixed fresh and oceanic waters in estuaries or bays from the point of oceanic water intrusion inland to a line connecting the outermost points of the headlands or protective jetties.
- (6) "Industrial Waste" means any liquid, gaseous, radioactive, or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade, or business, or from the development or recovery of any natural resources.

(7) "Marine Waters" means all oceanic, offshore waters outside of estuaries or bays and within the territorial limits of the State of Oregon.

(8) "mg/l" means milligrams per liter.

(9) "Pollution" means such contamination or other alteration of the physical, chemical, or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt, or odor of the waters, or such radioactive or other substance into any waters of the state which either by itself or in connection with any other substance present, will or can reasonably be expected to create a public nuisance or render such waters harmful, detrimental, or injurious to public health, safety, or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life, or the habitat thereof.

(10) "Public Water" means the same as "waters of the state".

(11) "Sewage" means the water-carried human or animal waste from residences, buildings, industrial establishments, or other places together with such groundwater infiltration and surface water as may be present. The admixture with sewage as herein defined of industrial wastes or wastes, as defined in sections (6) and (13) of this rule, shall also be considered "sewage" within the meaning of this division.

(12) "SS" means suspended solids.

(13) "Wastes" means sewage, industrial wastes, and all other liquid, gaseous, solid, radioactive, or other substances which will or may cause pollution or tend to cause pollution of any water of the state.

(14) "Waters of the State" include lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon, and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters which do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction.

(15) "Low Flow Period" means the flows in a stream resulting from primarily groundwater discharge or baseflows augmented from lakes and storage projects during the driest period of the year. The dry weather period varies across the state according to climate and topography. Wherever the low flow period is indicated in the Water Quality Management Plans, this period has been approximated by the inclusive months. Where applicable in a waste discharge permit, the low flow period may be further defined.

(16) "Secondary Treatment" as the following context may require for:

(a) "Sewage Wastes" means the minimum level of treatment mandated by EPA regulations pursuant to Public Law 92-500;

(b) "Industrial and other waste sources" imply control equivalent to best practicable treatment (BPT).

(17) "Nonpoint Sources" refers to diffuse or unconfined sources of pollution where wastes can either enter into -- or be conveyed by the movement of water to -- public waters.

(18) "Loading Capacity (LC)" -- The greatest amount of loading that a water can receive without violating water quality standards.

(19) "Load Allocation (LA)" -- The portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources. Load allocations are best estimates of the loading which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting loading. Whenever possible, natural and nonpoint source loads should be distinguished.

(20) "Wasteload Allocation (WLA)" -- The portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation.

(21) "Total Maximum Daily Load (TMDL)" -- The sum of the individual WLAs for point sources and LAs for nonpoint sources and background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. If Best Management Practices (BMPs) or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations can be made less stringent. Thus, the TMDL process provides for nonpoint source control tradeoffs.

(22) "Land Development" refers to any human induced change to improved or unimproved real estate, including but not limited to construction, installation or expansion of a building or other structure, land division, drilling, and site alteration such as that due to land surface mining, dredging, grading, construction of earthen berms, paving, improvements for use as parking or storage, excavation or clearing.

(23) "Jurisdiction" refers to any city or county agency in the Tualatin River and Oswego Lake subbasins that regulates land development activities within its boundaries by approving plats, site plans or issuing permits for land development.

(24) "Erosion Control Plan" shall be a plan containing a list of best management practices to be applied during construction to control and limit soil erosion.

(25) "Public Works Project" means any land development conducted or financed by a local, state, or federal governmental body.

(26) "Stormwater Quality Control Facility" refers to any structure or drainage way that is designed, constructed, and maintained to collect and filter, retain, or detain surface water runoff during and after a storm event for the purpose of water quality improvement. It may also include, but not be limited to, existing features such as wetlands, water quality swales, and ponds which are maintained as stormwater quality control facilities.

(27) "Water Quality Swale" is a natural depression or wide shallow ditch used to temporarily store, route, or filter runoff for the purpose of improving water quality.

(28) "In Lieu Fee" means a fee collected by a jurisdiction in lieu of requiring construction of on-site stormwater quality control facilities.

(29) "Effluent Limited" can mean one of the following categories:

(a) A receiving stream which is meeting and/or is expected to meet water quality standards with the implementation of standard treatment technology which is secondary treatment for sewage wastes and best practicable treatment (BPT) for industrial and other waste sources;

(b) A receiving stream for which there is insufficient information to determine if water quality standards are being met with standard treatment technology.

(30) "Water Quality Limited" can mean one of the following categories:

(a) A receiving stream which does not meet instream water quality standards during the entire year or defined season even after the implementation of standard technology;

(b) A receiving stream which achieves and is expected to continue to achieve instream water quality standard but utilizes higher than standard technology to protect beneficial uses;

(c) A receiving stream for which there is insufficient information to determine if water quality standards are being met with higher than standard treatment technology or where through professional judgment the receiving stream would not be expected to meet water quality standards during the entire year or defined season without higher than standard technology.

(31) "Reserve Capacity" means that portion of a receiving stream's loading capacity which has not been allocated to point sources or nonpoint sources and natural background as waste load allocations or load allocations, respectively. The reserve capacity includes that loading capacity which has been set aside for a safety margin and is otherwise unallocated.

(32) "Aquatic Species" means any plants or animals which live at least part of their life cycle in waters of the State.

(33) "Biological Criteria" means numerical values or narrative expressions that describe the biological integrity of aquatic communities inhabiting waters of a given designated aquatic life use.

(34) "Designated Beneficial Use" means the purpose or benefit to be derived from a water body, as designated by the Water Resources Department or the Commission.

(35) "Indigenous" means supported in a reach of water or known to have been supported according to historical records compiled by State and Federal agencies or published scientific literature.

(36) "Resident Biological Community" means aquatic life expected to exist in a particular habitat when water quality standards for a specific ecoregion, basin, or water body are met. This shall be established by accepted biomonitoring techniques.

(37) "Without Detrimental Changes in the Resident Biological Community" means no loss of ecological integrity when compared to natural conditions at an appropriate reference site or region.

(38) "Ecological Integrity" means the summation of chemical, physical and biological integrity capable of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of the region.

(39) "Appropriate Reference Site or Region" means a site on the same water body, or within the same basin or ecoregion that has similar habitat conditions, and represents the water quality and biological community attainable within the areas of concern.

(40) "Critical Habitat" means those areas which support rare, threatened or endangered species, or serve as sensitive spawning and rearing areas for aquatic life.

(41) "High Quality Waters" means those waters which meet or exceed those levels that are necessary to support the propagation of fish, shellfish, and wildlife and recreation in and on the water, and other designated beneficial uses.

(42) "Outstanding Resource Waters" means those waters designated by the Environmental Quality Commission where existing high quality waters constitute an outstanding state or national resource based on their extraordinary water quality or ecological values, or where special water quality protection is needed to maintain critical habitat areas.

(43) "Short-Term Disturbance" means a temporary disturbance where water quality standards may be violated briefly, but not of sufficient duration to cause acute or chronic effects on beneficial uses.

(44) "Intergravel Dissolved Oxygen" (IGDO) -- The concentration of oxygen measured in the stream gravel pore water. For the purposes of compliance with criteria, the dissolved oxygen concentration should be measured within a redd or artificial redd, down-gradient of the egg pocket. Measurements should be taken within a limited time period; for example, prior to emergence of fry during the month of March.

(45) "Spatial Median" -- The value which falls in the middle of a data set of multiple IGDO measurements taken within a spawning area. Half the samples should be greater than, and half the samples should be less than the spatial median.

(46) "Daily Mean" (dissolved oxygen) -- The numeric average of an adequate number of data to describe the variation in dissolved oxygen concentration throughout a day, including daily maximums and minimums. For the purpose of calculating the mean, concentrations in excess of 100 percent of saturation are valued at the saturation concentration.

(47) "Monthly (30-day) Mean Minimum" (dissolved oxygen) -- The minimum of the 30 consecutive day floating averages of the calculated daily mean dissolved oxygen concentration.

(48) "Weekly (seven-day) Mean Minimum" (dissolved oxygen) -- The minimum of the seven consecutive day floating average of the calculated daily *mean* dissolved oxygen concentration.

(49) "Weekly (seven-day) Minimum Mean" (dissolved oxygen) -- The minimum of the seven consecutive day floating average of the daily *minimum* concentration. For purposes of application of the criteria, this value will be used as the reference for diurnal minimums.

(50) "Minimum" (dissolved oxygen) -- The minimum recorded concentration including seasonal and diurnal minimums.

(51) "Cold-Water Aquatic Life" -- The aquatic communities that are physiologically restricted to cold water, composed of one or more species sensitive to reduced oxygen levels. Including but not limited to *Salmonidae* and cold-water invertebrates.

(52) "Cool-Water Aquatic Life" -- The aquatic communities that are physiologically restricted to cool waters, composed of one or more species having dissolved oxygen requirements believed similar to the cold-water communities. Including but not limited to *Cottidae*, *Osmeridae*, *Acipenseridae*, and sensitive *Centrarchidae* such as the small-mouth bass.

(53) "Warm-Water Aquatic Life" -- The aquatic communities that are adapted to warm-water conditions and do not contain either cold- or cool-water species.

(54) "Numeric Temperature Criteria" are measured as the seven-day moving average of the daily maximum temperatures. If there is insufficient data to establish a seven-day average of maximum temperatures, the numeric criteria shall be applied as an instantaneous maximum. The measurements shall be made using a sampling protocol appropriate to indicate impact to the beneficial uses;

(55) "Measurable Temperature Increase" means an increase in stream temperature of more than 0.25°F;

(56) "Anthropogenic", when used to describe "sources" or "warming", means that which results from human activity;

(57) "Ecologically Significant Cold-Water Refuge" exists when all or a portion of a waterbody supports stenotypic cold-water species (flora or fauna) not otherwise widely supported within the subbasin, and either:

(a) Maintains cold-water temperatures throughout the year relative to other segments in the subbasin, providing summertime cold-water holding or rearing habitat that is limited in supply, or;

(b) Supplies cold water to a receiving stream or downstream reach that supports cold-water biota.

Stat. Auth: ORS 183.500, ORS 468.020, ORS 468B.048, ORS 468.705, ORS 468.710 & ORS 468.735

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 24-1981, f. & ef. 9-8-81; DEQ 16-1988, f. & cert. ef. 7-13-88; DEQ 16-1989, f. & cert. ef. 7-31-89 (and corrected 8-3-89); DEQ 30-1989, f. & cert. ef. 12-14-89; DEQ 22-1990, f. & cert. ef. 7-6-90; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1991, f. & cert. ef. 9-30-91; DEQ 5-1996, f. & cert. ef. 3-7-96

340-041-0026

Policies and Guidelines Generally Applicable to All Basins

(1) In order to maintain the quality of waters in the State of Oregon, the following is the general policy of the EQC:

(a) Antidegradation Policy for Surface Waters. The purpose of the Antidegradation Policy is to guide decisions that affect water quality such that unnecessary degradation from point and nonpoint sources of pollution is prevented, and to protect, maintain, and enhance existing surface water quality to protect all existing beneficial uses. The standards and policies set forth in OAR 340-041-0120 through 340-041-0962 are intended to implement the Antidegradation Policy;

(A) High Quality Waters Policy: Where existing water quality meets or exceeds those levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, and other designated beneficial uses, that level of water quality shall be maintained and protected. The Environmental Quality Commission, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing planning process, and with full consideration of sections (2), (3) and (5) of this rule, however, may allow a lowering of water quality in these high quality waters if they find:

- (i) No other reasonable alternatives exist except to lower water quality; and
- (ii) The action is necessary and justifiable for economic or social development benefits and outweighs the environmental costs of lowered water quality; and
- (iii) All water quality standards will be met and beneficial uses protected.

(B) The Director or a designee may allow lower water quality on a short term basis in order to respond to emergencies or to otherwise protect public health and welfare;

(D) Outstanding Resource Waters Policy: Where existing high quality waters constitute an outstanding state or national resource such as those waters designated as extraordinary resource waters, or as critical habitat areas, the existing water quality and water quality values shall be maintained and protected, and classified as "Outstanding Resource Waters of Oregon". The Commission may specially designate high quality waterbodies to be classified as Outstanding Resource Waters in order to protect the water quality parameters that affect ecological integrity of critical habitat or special water quality values that are vital to the unique character of those waterbodies. The Department will develop a screening process and establish a list of nominated waterbodies for Outstanding Resource Waters designation in the Biennial Water Quality Status Assessment Report (305(b) Report). The priority waterbodies for nomination include:

- (i) National Parks;
- (ii) National Wild and Scenic Rivers;
- (iii) National Wildlife Refuges;
- (iv) State Parks; and

(v) State Scenic Waterways.

(E) The Department will bring to the Commission a list of waterbodies which are proposed for designation as Outstanding Resource Waters at the time of each Triennial Water Quality Standards Review;

(3) The Commission or Department may grant exceptions to sections (2) and (6) of this rule and approvals to section (5) of this rule for major dischargers and other dischargers, respectively. Major dischargers include those industrial and domestic sources that are classified as major sources for permit fee purposes in OAR 340-045-0075(2).

(a) In allowing new or increased discharged loads, the Commission or Department shall make the following findings:

(C) The new or increased discharged load shall not be granted if the receiving stream is classified as being water quality limited under OAR 340-041-0006(30)(a), unless:

(iii) Effective July 1, 1996, in waterbodies designated water-quality limited for dissolved oxygen, when establishing WLAs under a TMDL for waterbodies meeting the conditions defined in this rule, the Department may at its discretion provide an allowance for WLAs calculated to result in no measurable reduction of dissolved oxygen. For this purpose, "no measurable reduction" is defined as no more than 0.10 mg/L for a single source and no more than 0.20 mg/L for all anthropogenic activities that influence the water quality limited segment. The allowance applies for surface water DO criteria and for Intergravel DO if a determination is made that the conditions are natural. The allowance for WLAs would apply only to surface water 30-day and seven-day means, and the IGDO action level; or

(iv) Under extraordinary circumstances to solve an existing, immediate, and critical environmental problem that the Commission or Department may consider a waste load increase for an existing source on a receiving stream designated water quality limited under OAR 340-041-0006(30)(a) during the period between the establishment of TMDLs, WLAs and LAs and their achievement based on the following conditions:

(I) That TMDLs, WLAs and LAs have been set; and

(II) That a compliance plan under which enforcement actions can be taken has been established and is being implemented on schedule; and

(III) That an evaluation of the requested increased load shows that this increment of load will not have an unacceptable temporary or permanent adverse effect on beneficial uses; and

(IV) That any waste load increase granted under subparagraph (iv) of this paragraph is temporary and does not extend beyond the TMDL compliance deadline established for

the waterbody. If this action will result in a permanent load increase, the action has to comply with sub-paragraphs (i) or (ii) of this paragraph.

(D) Effective July 1, 1996, in any waterbody identified by the Department as exceeding the relevant numeric temperature criteria specified for each individual water quality management basin identified in OAR 340-041-0205, OAR-340-041-0245, OAR-340-041-0285, OAR-340-041-0325, OAR-340-041-0365, OAR-340-041-0445, OAR-340-041-0485, OAR-340-041-0525, OAR-340-041-0565, OAR-340-041-0605, OAR-340-041-0645, OAR-340-041-0685, OAR-340-041-0725, OAR-340-041-0765, OAR-340-041-0805, OAR-340-041-0845, OAR-340-041-0885, OAR-340-041-0925, OAR-340-041-0965, and designated as water quality limited under Section 303(d) of the Clean Water Act, the following requirements shall apply to appropriate watersheds or stream segments in accordance with priorities established by the Department. The Department may determine that a plan is not necessary for a particular stream segment or segments within a water-quality limited basin based on the contribution of the segment(s) to the temperature problem:

(ii) Sources shall continue to maintain and improve, if necessary, the surface water temperature management plan in order to maintain the cooling trend until the numeric criterion is achieved or until the Department, in consultation with the Designated Management Agencies (DMAs), has determined that all feasible steps have been taken to meet the criterion and that the designated beneficial uses are not being adversely impacted. In this latter situation, the temperature achieved after all feasible steps have been taken will be the temperature criterion for the surface waters covered by the applicable management plan. The determination that all feasible steps have been taken will be based on, but not limited to, a site-specific balance of the following criteria: protection of beneficial uses; appropriateness to local conditions; use of best treatment technologies or management practices or measures; and cost of compliance;

(vii) In waters the Department determines to be critical for bull trout recovery, the goal of a bull trout surface water temperature management plan is to specifically protect those habitat ranges necessary to maintain the viability of existing stocks by restoring stream and riparian conditions or allowing them to revert to conditions attaining the coolest surface water temperatures possible under natural background conditions;

(F) In basins determined by the Department to be exceeding the numeric temperature criteria, and which are required to develop surface water temperature management plans, new or increased discharge loads from point sources which require an NPDES permit under Section 402 of the Clean Water Act or hydro-power projects which require certification under Section 401 of the Clean Water Act are allowed a 1.0°F total cumulative increase in surface water temperatures as the surface water temperature management plan is being developed and implemented for the water quality limited basin if:

(i) In the best professional judgment of the Department, the new or increased discharge load, even with the resulting 1.0°F cumulative increase, will not conflict with or impair

the ability of a surface water temperature management plan to achieve the numeric temperature criteria; and

(ii) A new or expanding source must demonstrate that it fits within the 1.0°F increase and that its activities will not result in a measurable impact on beneficial uses. This latter showing must be made by demonstrating to the Department that the temperature change due to its activities will be less than or equal to 0.25°F under a conservative approach or by demonstrating the same to the EQC with appropriate modeling.

(G) Any source may petition the Department for an exception to paragraph (F) of this subsection, provided:

(i) The discharge will result in less than 1.0°F increase at the edge of the mixing zone, and subparagraph (ii) or (iii) of this paragraph applies;

(ii) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(iii) The source demonstrates that:

(I) It is implementing all reasonable management practices;

(II) Its activity will not significantly affect the beneficial uses; and

(III) The environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(H) Any source or DMA may petition the Commission for an exception to paragraph (F) of this subsection, provided:

(i) The source or DMA provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) The source or DMA demonstrates that:

(I) It is implementing all reasonable management practices;

(II) Its activity will not significantly affect the beneficial uses; and

(III) The environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

Stat. Auth: ORS 183.500, ORS 468.020, ORS 468B.048, ORS 468.705, ORS 468.710 & ORS 468.735

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 13-1989, f. & cert. ef. 6-14-89; DEQ 22-1990, f. & cert. ef. 7-6-90; DEQ 17-1991, f. & cert. ef. 9-30-91; DEQ 5-1996, f. & cert. ef. 3-7-96

340-041-0027

Biological Criteria

Waters of the state shall be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.

Stat. Auth.: ORS 468.735

Stats. Implemented: ORS 468B.048

Hist.: DEQ 14-1991, f. & cert. ef. 8-13-91

340-041-0120

Implementation Program Applicable to All Basins

(11) EQC policy on surface water temperature (as regulated in the basin standards found in OAR 340-041-0205, OAR-340-041-0245, OAR-340-041-0285, OAR-340-041-0325, OAR-340-041-0365, OAR-340-041-0445, OAR-340-041-0485, OAR-340-041-0525, OAR-340-041-0565, OAR-340-041-0605, OAR-340-041-0645, OAR-340-041-0685, OAR-340-041-0725, OAR-340-041-0765, OAR-340-041-0805, OAR-340-041-0845, OAR-340-041-0885, OAR-340-041-0925, OAR-340-041-0965:

(c) The temperature criteria in the basin standards establish numeric and narrative criteria to protect designated beneficial uses and to initiate actions to control anthropogenic sources that adversely increase or decrease stream temperatures. Natural surface water temperatures at times exceed the numeric criteria due to naturally high ambient air temperatures, naturally heated discharges, naturally low stream flows or other natural conditions. These exceedances are not water quality standards violations when the natural conditions themselves cause water temperatures to exceed the numeric criteria. In these situations, the natural surface water temperatures become the numeric criteria. In surface waters where both natural and anthropogenic factors cause exceedances of the numeric criteria, each anthropogenic source will be responsible for controlling, through implementation of a management plan, only that portion of the temperature increase caused by that anthropogenic source;

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468B.030 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 16-1992, f. & cert. ef. 8-7-92; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 11-1997, f. & cert. ef. 6-11-97

340-041-0150

Nuisance Phytoplankton Growth

The following values and implementation program shall be applied to lakes, reservoirs, estuaries and streams, except for ponds and reservoirs less than ten acres in surface area, marshes and saline lakes:

(1) The following average Chlorophyll **a** values shall be used to identify water bodies where phytoplankton may impair the recognized beneficial uses:

(a) Natural lakes which thermally stratify: 0.01 mg/l;

(b) Natural lakes which do not thermally stratify, reservoirs, rivers and estuaries: 0.015 mg/l;

(c) Average Chlorophyll **a** values shall be based on the following methodology (or other methods approved by the Department): A minimum of three samples collected over any three consecutive months at a minimum of one representative location (e.g., above the deepest point of a lake or reservoir or at a point mid-flow of a river) from samples integrated from the surface to a depth equal to twice the secchi depth or the bottom (the lesser of the two depths); analytical and quality assurance methods shall be in accordance with the most recent edition of **Standard Methods for the Examination of Water and Wastewater**.

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 7-1986, f. & ef. 3-26-86

340-041-0202

Beneficial Water Uses to be Protected

Water quality in the North Coast-Lower Columbia River Basin (see **Figures 1 and 2**) shall be managed to protect the recognized beneficial uses as indicated in **Table 1**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0205

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990 and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the North Coast -- Lower Columbia River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(G) For estuarine water, the dissolved oxygen concentrations shall not be less than 6.5 mg/l (for coastal waterbodies);

(H) For marine waters, no measurable reduction in dissolved oxygen concentration shall be allowed.

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In the Columbia River or its associated sloughs and channels from the mouth to river mile 309 when surface water temperatures exceed 68.0°F (20.0°C);

(iii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iv) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(v) In waters determined by the Department to be ecologically significant cold-water refugia;

(vi) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vii) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(viii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (viii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(D) Marine and estuarine waters: No significant increase above natural background temperatures shall be allowed, and water temperatures shall not be altered to a degree

which creates or can reasonably be expected to create an adverse effect on fish or other aquatic life.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 14I-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the following ranges:

(A) Marine waters: 7.0 – 8.5;

(B) Estuarine and fresh waters: 6.5 – 8.5. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph:

(i) Freshwaters and Estuarine Waters Other than Shellfish Growing Waters:

(I) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(II) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(ii) Marine Waters and Estuarine Shellfish Growing Waters: A fecal coliform median concentration of 14 organisms per 100 milliliters, with not more than ten percent of the samples exceeding 43 organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek, or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n)(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving

waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) Failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill;

(ii) The modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and other migrating fish and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon;

(iii) Adequate data will exist to determine compliance with the standards; and

(iv) Biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours;

(D) The Commission may, at its discretion, consider alternative modes of migration.

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0202:

(A) Columbia River -- 500.0 mg/l;

(B) All Other Fresh Water Streams and Tributaries -- 100.0 mg/l.

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the North Coast – Lower Columbia River Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity

below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

- (A) Type of operation to be conducted;
- (B) Characteristics of effluent flow rates and composition;
- (C) Characteristics of low flows of receiving waters;
- (D) Description of potential environmental effects;
- (E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate

the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 6-1995, f. & cert. ef. 2-28-95; DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1995, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Mid Coast Basin

340-041-0242

Beneficial Water Uses to be Protected

Water quality in the Mid Coast Basin (see **Figures 1 and 3**) shall be managed to protect the recognized beneficial uses as indicated in **Table 2**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0245

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Mid Coast Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0

mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(G) For estuarine water, the dissolved oxygen concentrations shall not be less than 6.5 mg/l (for coastal waterbodies);

(H) For marine waters, no measurable reduction in dissolved oxygen concentration shall be allowed.

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(D) Marine and estuarine waters: No significant increase above natural background temperatures shall be allowed, and water temperatures shall not be altered to a degree which creates or can reasonably be expected to create an adverse effect on fish or other aquatic life.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 14I-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the following ranges:

(A) Marine waters: 7.0 – 8.5;

(B) Estuarine and fresh waters: 6.5 – 8.5. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures

have been taken to bring the pH in the impounded waters into compliance with the criteria.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph:

(i) Freshwaters and Estuarine Waters Other than Shellfish Growing Waters:

(I) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(II) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(ii) Marine Waters and Estuarine Shellfish Growing Waters: A fecal coliform median concentration of 14 organisms per 100 milliliters, with not more than ten percent of the samples exceeding 43 organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek, or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0242: 100.0 mg/l;

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bio-accumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Mid Coast Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations

required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) Other requirements for alternate mixing zones: The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

340-041-0270

Special Policies and Guidelines

In order to preserve the existing high quality water in Clear Lake north of Florence for use as a public water supply source requiring only minimal filtration, it is the policy of the Environmental Quality Commission to protect the Clear Lake watershed including both surface and groundwaters, from existing and potential contamination sources with the following requirements:

(1) The total phosphorus maximum annual loading discharged into Clear Lake shall not exceed 241 pounds per year from all sources.

Stat. Auth.: ORS 183.335, ORS 454.625, ORS 468.020, ORS 468B.010 & ORS 468B.020.

Stats. Implemented: ORS 454.685

Hist.: DEQ 3-1983, f. & ef. 4-18-83; DEQ 44-1990, f. & cert. ef. 12-19-90; DEQ 20-1996(Temp), f. & cert. ef. 10-14-96; DEQ 4-1997, f. & cert. ef. 3-7-97

Umpqua Basin

340-041-0282

Beneficial Water Uses to be Protected

Water quality in the Umpqua River Basin (see **Figures 1** and **4**) shall be managed to protect the recognized beneficial uses as indicated in **Table 3**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0285

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Umpqua River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5

mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(G) For estuarine water, the dissolved oxygen concentrations shall not be less than 6.5 mg/l (for coastal waterbodies);

(H) For marine waters, no measurable reduction in dissolved oxygen concentration shall be allowed.

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(D) Marine and estuarine waters: No significant increase above natural background temperatures shall be allowed, and water temperatures shall not be altered to a degree which creates or can reasonably be expected to create an adverse effect on fish or other aquatic life.

(c) Turbidity (Nephelometric Turbidity Units, NTU):

(A) No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(i) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(ii) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(B) When appropriate studies are completed by the Corps of Engineers, or others, the Environmental Quality Commission will, consistent with the provisions of ORS Chapter 468, modify the turbidity standard, on a case-by-case basis if necessary, to accommodate such specific water storage and development projects in the South Umpqua Basin as are found to be in the best overall interest of the public.

(d) pH (hydrogen ion concentration):

(A) Fresh waters (except Cascade lakes) and estuarine waters: pH values shall not fall outside the range of 6.5 to 8.5. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria;

(B) Marine waters: pH values shall not fall outside the range of 7.0 to 8.5;

(C) Cascade lakes above 3,000 feet altitude: pH values shall not fall outside the range of 6.0 to 8.5.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph:

(i) Freshwaters and Estuarine Waters Other than Shellfish Growing Waters:

(I) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(II) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(ii) Marine Waters and Estuarine Shellfish Growing Waters: A fecal coliform median concentration of 14 organisms per 100 milliliters, with not more than ten percent of the samples exceeding 43 organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

- (f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health shall not be allowed;
- (g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;
- (h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;
- (i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;
- (j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;
- (k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;
- (l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;
- (m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;
- (n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;
- (o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0282: 500.0 mg/l;
- (p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Umpqua River Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) **Overall environmental benefit.**

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water

conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

- (i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and
- (ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and
- (iii) Physical and biological characteristics that differ significantly from nearby natural streams; and
- (iv) A much lower diversity of aquatic species than found in nearby natural streams; and
- (v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

- (i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and
- (ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and
- (iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and
- (iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and
- (v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and
- (vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

South Coast Basin

340-041-0322

Beneficial Water Uses to be Protected

Water quality in the South Coast Basin (see **Figures 1** and **5**) shall be managed to protect the recognized beneficial uses as indicated in **Table 4**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0325

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the South Coast Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(G) For estuarine water, the dissolved oxygen concentrations shall not be less than 6.5 mg/l (for coastal waterbodies);

(H) For marine waters, no measurable reduction in dissolved oxygen concentration shall be allowed.

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(D) Marine and estuarine waters: No significant increase above natural background temperatures shall be allowed, and water temperatures shall not be altered to a degree which creates or can reasonably be expected to create an adverse effect on fish or other aquatic life.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (Hydrogen ion concentration): pH values shall not fall outside the range of:

(A) Estuarine and fresh waters: 6.5 – 8.5. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures

have been taken to bring the pH in the impounded waters into compliance with the criteria;

(B) Marine waters: 7.0 – 8.5.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph:

(i) Freshwaters and Estuarine Waters Other than Shellfish Growing Waters:

(I) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(II) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(ii) Marine Waters and Estuarine Shellfish Growing Waters: A fecal coliform median concentration of 14 organisms per 100 milliliters, with not more than ten percent of the samples exceeding 43 organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

- (i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;
- (j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;
- (k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;
- (l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;
- (m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;
- (n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;
- (o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0322: 100.0 mg/l;
- (p) Toxic Substances:
- (A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;
- (B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;
- (C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific

basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the South Coast Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations

required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) Other requirements for alternate mixing zones: The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Rogue Basin

340-041-0362

Beneficial Water Uses to be Protected

Water quality in the Rogue River Basin (see **Figures 1 and 6**) shall be managed to protect the recognized beneficial uses as indicated in **Table 5**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0365

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Rogue River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(G) For estuarine water, the dissolved oxygen concentrations shall not be less than 6.5 mg/l (for coastal waterbodies);

(H) For marine waters, no measurable reduction in dissolved oxygen concentration shall be allowed.

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on

January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

- (i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);
- (ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);
- (iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);
- (iv) In waters determined by the Department to be ecologically significant cold-water refugia;
- (v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;
- (vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;
- (vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

- (i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or
- (ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(D) Marine and estuarine waters: No significant increase above natural background temperatures shall be allowed, and water temperatures shall not be altered to a degree

which creates or can reasonably be expected to create an adverse effect on fish or other aquatic life.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the following ranges:

(A) Marine waters: 7.0 – 8.5;

(B) Estuarine and fresh waters (except Cascade lakes): 6.5 – 8.5. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria;

(C) Cascade lakes above 3,000 feet altitude: pH values shall not fall outside the range of 6.0 to 8.5.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph:

(i) Freshwaters and Estuarine Waters Other than Shellfish Growing Waters:

(I) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(II) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(ii) Marine Waters and Estuarine Shellfish Growing Waters: A fecal coliform median concentration of 14 organisms per 100 milliliters, with not more than ten percent of the samples exceeding 43 organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek, or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0362: 500.0 mg/l;

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Rogue Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the

Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

- (A) Be as small as feasible;
 - (B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;
 - (C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;
 - (D) Not threaten public health;
 - (E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.
- (d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:
- (A) Type of operation to be conducted;
 - (B) Characteristics of effluent flow rates and composition;
 - (C) Characteristics of low flows of receiving waters;
 - (D) Description of potential environmental effects;
 - (E) Proposed design for outfall structures.
- (e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;
- (f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.
- (g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point

of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(a) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(b) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(c) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(d) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this

analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental

benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of

the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

340-041-0385

Special Policies and Guidelines

In order to improve water quality within the Bear Creek subbasin to meet existing water quality standards for dissolved oxygen and pH, the following special rules for total maximum daily loads, waste load allocations, load allocations, and program plans are established.

(1) After the completion of wastewater control facilities and program plans approved by the Commission under this rule and no later than December 31, 1994, unless otherwise modified by program plans no activities shall be allowed and no wastewater shall be discharged to Bear Creek or its tributaries without the authorization of the Commission that cause the following parameters to be exceeded in Bear Creek:

(a) Low-Flow Season Approximately May 1 through November 30*:

(A) Ammonia Nitrogen Nitrogen as N (mg/1) -- 0.25;

(B) Instream Five-Day Biochemical Oxygen (Demand (mg/1))¹ -- 3.0;

(C) Instream Five-Day Total Phosphorus as P (mg/1) -- 0.08.

(b) High Flow Season Approximately December 1 through April 30*:

(A) Ammonia Nitrogen Nitrogen as N (mg/1) -- 1.0;

(B) Instream Five-Day Biochemical Oxygen Demand (mg/1)² -- 2.5.

¹As measured at the Valley View Road Sampling Site. For the purposes of waste load allocations, the biochemical oxygen demand is calculated as the ammonia concentration multiplied by 4.35 and added to the measured effluent biochemical oxygen demand.

²Median value as measured at the Kirtland Road sampling site.

*Precise dates for complying with this rule may be conditioned on physical conditions, such as flow and temperature, of the receiving stream and shall be specified in individual permits or memorandums of understanding issued by the Department.

Stat. Auth.: ORS 468.710 & ORS 468.735

Stats. Implemented: ORS 468B.030

Hist.: DEQ 17-1989, f. & cert. ef. 7-31-89; DEQ 40-1990, f. & cert. ef. 11-15-90

Willamette Basin

340-041-0442

Beneficial Water Uses to be Protected

Water quality in the Willamette River Basin (see **Figures 1** and **7**) shall be managed to protect the recognized beneficial uses as indicated in **Table 6**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77

340-041-0445

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Willamette River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted,

and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In the Columbia River or its associated sloughs and channels from the mouth to river mile 309 when surface water temperatures exceed 68.0°F (20.0°C);

(iii) In the Willamette River or its associated sloughs and channels from the mouth to river mile 50 when surface water temperatures exceed 68.0°F (20.0°C);

(iv) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(v) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(vi) In waters determined by the Department to be ecologically significant cold-water refugia;

(vii) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(viii) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(ix) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (ix) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water

Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the ranges identified in paragraphs (A), (B), and (C) of this subsection. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria:

(A) Columbia River: 7.0 – 8.5;

(B) All other basin waters (except Cascade lakes): 6.5 – 8.5;

(C) Cascade lakes above 3,000 feet altitude: pH values shall not fall outside the range of 6.0 to 8.5.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters and Estuarine Waters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or

other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n)(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) Failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill;

(ii) The modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and other migrating fish and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon;

(iii) Adequate data will exist to determine compliance with the standards; and

(iv) Biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours;

(D) The Commission may, at its discretion, consider alternative modes of migration.

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0442:

(A) Columbia River -- 500.0 mg/l;

(B) Willamette River and Tributaries -- 100.0 mg/l.

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity

occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Willamette River Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

- (i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and
- (ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and
- (iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and
- (iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and
- (v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and
- (vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: Publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 6-1995, f. & cert. ef. 2-28-95; DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Sandy Basin

340-041-0482

Beneficial Water Uses to be Protected

Water quality in the Sandy River Basin (see **Figures 1 and 8**) shall be managed to protect the recognized beneficial uses as indicated in **Table 7**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0485

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Sandy River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In the Columbia River or its associated sloughs and channels from the mouth to river mile 309 when surface water temperatures exceed 68.0°F (20.0°C);

(iii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iv) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(v) In waters determined by the Department to be ecologically significant cold-water refugia;

(vi) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vii) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(viii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (viii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the ranges identified in paragraphs (A), (B), and (C) of this subsection. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria:

(A) Mainstem Columbia River (river miles 120 to 147): pH values shall not fall outside the range of 7.0 to 8.5;

(B) All other Basin waters (except Cascade lakes): pH values shall not fall outside the range of 6.5 to 8.5;

(C) Cascade lakes above 3,000 feet altitude: pH values shall not fall outside the range of 6.0 to 8.5.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n)(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) Failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill;

(ii) The modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and other migrating fish and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon;

(iii) Adequate data will exist to determine compliance with the standards; and

(iv) Biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours;

(D) The Commission may, at its discretion, consider alternative modes of migration.

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0482:

(A) Mainstem Columbia River (River Miles 120 to 147) -- 200.0 mg/l;

(B) All Other Basin Waters -- 100.0 mg/l.

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as

scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Sandy Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing Zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-97 (and corrected 8-13-92); DEQ 6-1995, f. & cert. ef. 2-28-95; DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Hood Basin

340-041-0522

Beneficial Water Uses to be Protected

Water quality in the Hood River Basin (see **Figures 1 and 9**) shall be managed to protect the recognized beneficial uses as indicated in **Table 8**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0525

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Hood River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore

require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In the Columbia River or its associated sloughs and channels from the mouth to river mile 309 when surface water temperatures exceed 68.0°F (20.0°C);

(iii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iv) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(v) In waters determined by the Department to be ecologically significant cold-water refugia;

(vi) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vii) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(viii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (viii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water

Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the ranges identified in paragraphs (A), (B), and (C) of this subsection. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria:

(A) Mainstem Columbia River (river miles 147 to 203): pH values shall not fall outside the range of 7.0 to 8.5;

(B) Other Hood River Basin streams (except Cascade lakes): pH values shall not fall outside the range of 6.5 to 8.5;

(C) Cascade lakes above 3,000 feet altitude: pH values shall not fall outside the range of 6.0 to 8.5.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such water shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n)(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) Failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill;

(ii) The modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and other migrating fish and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon;

(iii) Adequate data will exist to determine compliance with the standards; and

(iv) Biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours;

(D) The Commission may, at its discretion, consider alternative modes of migration.

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0522: 500.0 mg/l;

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Hood River Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the

Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

- (A) Be as small as feasible;
 - (B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;
 - (C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;
 - (D) Not threaten public health;
 - (E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.
- (d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:
- (A) Type of operation to be conducted;
 - (B) Characteristics of effluent flow rates and composition;
 - (C) Characteristics of low flows of receiving waters;
 - (D) Description of potential environmental effects;
 - (E) Proposed design for outfall structures.
- (e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;
- (f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.
- (g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point

of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this

analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental

benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of

the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 6-1995, f. & cert. ef. 2-28-95; DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Deschutes Basin

340-041-0562

Beneficial Water Uses to be Protected

Water quality in the Deschutes River Basin (see **Figures 1 and 10**) shall be managed to protect the recognized beneficial uses as indicated in **Table 9**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0565

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Deschutes River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore

require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In the Columbia River or its associated sloughs and channels from the mouth to river mile 309 when surface water temperatures exceed 68.0°F (20.0°C);

(iii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iv) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(v) In waters determined by the Department to be ecologically significant cold-water refugia;

(vi) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vii) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(viii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (viii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water

Pollution Control Act) or OAR 141-085-0100 et. seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the ranges identified in paragraphs (A), (B), and (C) of this subsection. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria:

(A) Columbia River (river miles 203 to 218): 7.0 - 8.5;

(B) All other Basin streams (except Cascade lakes): 6.5 – 8.5;

(C) Cascade lakes above 3,000 feet altitude: pH values shall not fall outside the range of 6.0 to 8.5.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or

other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n)(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) Failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill;

(ii) The modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and other migrating fish and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon;

(iii) Adequate data will exist to determine compliance with the standards; and

(iv) Biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours;

(D) The Commission may, at its discretion, consider alternative modes of migration.

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0562: 500.0 mg/l;

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Deschutes Basin are outside the numerical limits of the above assigned water quality standards, the naturally

occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most

appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

- (A) Be as small as feasible;
- (B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;
- (C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;
- (D) Not threaten public health;
- (E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

- (A) Type of operation to be conducted;
- (B) Characteristics of effluent flow rates and composition;
- (C) Characteristics of low flows of receiving waters;
- (D) Description of potential environmental effects;
- (E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the

receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) Constructed water course: A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) Insignificant discharges: Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) Other requirements for alternate mixing zones: The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 6-1995, f. & cert. ef. 2-28-95; DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

John Day Basin

340-041-0602

Beneficial Water Uses to be Protected

Water quality in the John Day River Basin (see **Figures 1 and 11**) shall be managed to protect the recognized beneficial uses as indicated in **Table 10**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0605

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the John Day River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired

waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In the Columbia River or its associated sloughs and channels from the mouth to river mile 309 when surface water temperatures exceed 68.0°F (20.0°C);

(iii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iv) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(v) In waters determined by the Department to be ecologically significant cold-water refugia;

(vi) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vii) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(viii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (viii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water

Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the ranges identified in paragraphs (A) and (B) of this subsection. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria:

(A) Columbia River (river miles 218 to 247): 7.0 – 8.5;

(B) All other Basin streams: 6.5 – 9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities set by the Department, the Department shall determine whether the values higher than 8.7 are anthropogenic or natural in origin.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or

other aquatic life, navigation, recreation, or other reasonable uses made of such water shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n)(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) Failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill;

(ii) The modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and other migrating fish and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon;

(iii) Adequate data will exist to determine compliance with the standards; and

(iv) Biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours;

(D) The Commission may, at its discretion, consider alternative modes of migration.

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0602:

(A) Columbia River -- 200.0 mg/l;

(B) John Day River and Tributaries -- 500.0 mg/l.

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity

occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the John Day Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary.

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

- (i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and
- (ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and
- (iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and
- (iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and
- (v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and
- (vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 6-1995, f. & cert. ef. 2-28-95; DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Umatilla Basin

340-041-0642

Beneficial Water Uses to be Protected

Water quality in the Umatilla River Basin (see **Figures 1 and 12**) shall be managed to protect the recognized beneficial uses as indicated in **Table 11**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77

340-041-0645

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Umatilla River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In the Columbia River or its associated sloughs and channels from the mouth to river mile 309 when surface water temperatures exceed 68.0°F (20.0°C);

(iii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iv) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(v) In waters determined by the Department to be ecologically significant cold-water refugia;

(vi) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vii) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(viii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (viii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et. seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the ranges identified in paragraphs (A) and (B) of this subsection. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria:

(A) Columbia River (river miles 247 to 309): 7.0 – 8.5;

(B) All other Basin streams: 6.5 – 9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities set by the Department, the Department shall determine whether the values higher than 8.7 are anthropogenic or natural in origin.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used to domestic purposes, livestock watering, irrigation, or bathing, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n)(A) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(B) The Commission may modify the total dissolved gas criteria in the Columbia River for the purpose of allowing increased spill for salmonid migration. The Commission must find that:

(i) Failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill;

(ii) The modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and other migrating fish and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon;

(iii) Adequate data will exist to determine compliance with the standards; and

(iv) Biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

(C) The Commission will give public notice and notify all known interested parties and will make provision for opportunity to be heard and comment on the evidence presented by others, except that the Director may modify the total dissolved gas criteria for emergencies for a period not exceeding 48 hours;

(D) The Commission may, at its discretion, consider alternative modes of migration.

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0642: Columbia River -- 200.0 mg/l;

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Umatilla River Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the

Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

- (A) Be as small as feasible;
 - (B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;
 - (C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;
 - (D) Not threaten public health;
 - (E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.
- (d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:
- (A) Type of operation to be conducted;
 - (B) Characteristics of effluent flow rates and composition;
 - (C) Characteristics of low flows of receiving waters;
 - (D) Description of potential environmental effects;
 - (E) Proposed design for outfall structures.
- (e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;
- (f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.
- (g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point

of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this

analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental

benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of

the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 6-1995, f. & cert. ef. 2-28-95; DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Walla Walla Basin

340-041-0682

Beneficial Water Uses to be Protected

Water quality in the Walla Walla River Basin (see **Figures 1** and **13**) shall be managed to protect the recognized beneficial uses as indicated in **Table 12**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0685

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Walla Walla River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore

require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(c) pH (hydrogen ion concentration): pH values shall not fall outside the range of 6.5 to 9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities

set by the Department, the Department shall determine whether the values higher than 8.7 are anthropogenic or natural in origin. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria;

(d) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(D) Effluent Limitations and Water Quality Limited Waterbodies: Effluent limitations to implement the criteria in this rule are found in OAR 340-041-0120(12) through (16). Implementation of the criteria in this rule in water quality limited waterbodies is described in OAR 340-041-0026(3)(a)(I) and OAR 340-041-0120(17).

(e) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health shall not be allowed;

(f) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(g) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(h) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(i) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(j) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(k) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(l) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(m) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(n) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0682: 200.0 mg/l;

(o) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(B) An exceedance of the numeric criteria identified in subparagraphs (A)(i) through (iii) of this subsection will not be deemed a temperature standard violation if it occurs when the air temperature during the warmest seven-day period of the year exceeds the 90th percentile of the seven-day average daily maximum air temperature calculated in a yearly series over the historic record. However, during such periods, the anthropogenic sources must still continue to comply with their surface water temperature management plans developed under OAR 340-041-0026(3)(a)(D);

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Walla Walla River Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026 (3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity

below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

- (A) Type of operation to be conducted;
- (B) Characteristics of effluent flow rates and composition;
- (C) Characteristics of low flows of receiving waters;
- (D) Description of potential environmental effects;
- (E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the location of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate

the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Grande Ronde Basin

340-041-0722

Beneficial Water Uses to be Protected

Water quality in the Grande Ronde River Basin (see **Figures 1 and 14**) shall be managed to protect the recognized beneficial uses as indicated in **Table 13**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77

340-041-0725

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Grande Ronde River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0

mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the ranges identified in paragraphs (A) and (B) of this subsection. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria:

(A) Mainstem Snake River (river miles 176 to 260): 7.0 – 9.0;

(B) All other Basin streams: 6.5 – 9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities set by the Department, the Department shall determine whether the values higher than 8.7 are anthropogenic or natural in origin.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of

samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0722:

(A) Mainstem Grande Ronde River -- 200.0 mg/l;

(B) Mainstem Snake River -- 750.0 mg/l.

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Grande Ronde River Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the

Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point

of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this

analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental

benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of

the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Powder Basin

340-041-0762

Beneficial Water Uses to be Protected

Water quality in the Powder River Basin (see **Figures 1 and 15**) shall be managed to protect the recognized beneficial uses as indicated in **Table 14**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-27-77

340-041-0765

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990 and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Powder River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore

require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water

Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the ranges identified in paragraphs (A) and (B) of this subsection. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria:

(A) Mainstem Snake River (river miles 260 to 335): 7.0 – 9.0;

(B) All other Basin streams: 6.5 – 9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities set by the Department, the Department shall determine whether the values higher than 8.7 are anthropo-genic or natural in origin.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or

other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) Development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0762: Mainstem Snake River -- 750.0 mg/l;

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Powder River Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quantity shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity

below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

- (A) Type of operation to be conducted;
- (B) Characteristics of effluent flow rates and composition;
- (C) Characteristics of low flows of receiving waters;
- (D) Description of potential environmental effects;
- (E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate

the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VI) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Malheur River Basin

340-041-0802

Beneficial Water Uses to be Protected

Water quality in the Malheur River Basin (see **Figures 1 and 16**) shall be managed to protect the recognized beneficial uses as indicated in **Table 15**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-27-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0805

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Malheur River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0

mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a 10 percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the range of 7.0 to 9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities set by the Department, the Department shall determine whether the values higher than 8.7 are anthropogenic or natural in origin. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria;

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative

to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0802: Snake River -- 750.0 mg/l.

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Malheur River Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quantity shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

- (i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and
- (ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and
- (iii) Physical and biological characteristics that differ significantly from nearby natural streams; and
- (iv) A much lower diversity of aquatic species than found in nearby natural streams; and
- (v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

- (i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and
- (ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and
- (iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Owyhee Basin

340-041-0842

Beneficial Water Uses to be Protected

Water quality in the Owyhee River Basin (see **Figures 1 and 17**) shall be managed to protect the recognized beneficial uses as indicated in **Table 16**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-27-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0845

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468. 990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Owyhee River Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the range of 7.0 to 9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities set by the Department, the Department shall determine whether the values higher than 8.7 are anthropogenic or natural in origin. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the

exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria;

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, or bathing, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0842: Snake River -- 750.0 mg/l;

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly

conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Owyhee River Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quantity shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits.

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Malheur Lake Basin

340-041-0882

Beneficial Water Uses to be Protected

Water quality in the Malheur Lake Basin (see **Figures 1 and 18**) shall be managed to protect the recognized beneficial uses as indicated in **Table 17**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 9-1985, f. & ef. 8-6-85

340-041-0885

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990 and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Malheur Lake Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water

Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration): pH values shall not fall outside the range of 7.0 to 9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities set by the Department, the Department shall determine whether the values higher than 8.7 are anthropogenic or natural in origin. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria;

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, or bathing, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPCs) in drinking water, edible fishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0882: None;

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Malheur Lake Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Goose and Summer Lakes Basin

340-041-0922

Beneficial Water Uses to be Protected

Water quality in the Goose and Summer Lakes Basin (See **Figures 1 and 19**) shall be managed to protect the recognized beneficial uses as indicated in **Table 18**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77

340-041-0925

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Goose and Summer Lakes Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approved coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

(d) pH (hydrogen ion concentration):

(A) Goose Lake: pH values shall not fall outside the range of 7.5 to 9.5;

(B) All other basin waters: pH values shall not fall outside the range of 7.0 to 9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities set by the Department, the Department shall determine whether the values higher than 8.7 are anthropogenic or natural in origin. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0922: None;

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Goose and Summer Lakes Basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) **Overall environmental benefit.**

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

- (i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and
- (ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and
- (iii) Physical and biological characteristics that differ significantly from nearby natural streams; and
- (iv) A much lower diversity of aquatic species than found in nearby natural streams; and
- (v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) **Other requirements for alternate mixing zones:** The following are additional requirements for dischargers requesting an alternate mixing zone:

- (i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and
- (ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and
- (iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

Klamath Basin

350-041-0962

Beneficial Water Uses to be Protected

Water quality in the Klamath Basin (see **Figures 1 and 20**) shall be managed to protect the recognized beneficial uses as indicated in **Table 19**.

[ED. NOTE: The Figure(s) and Table referenced in this rule are not printed in the OAR Compilation. Copies are available from the agency.]

Stat. Auth.: ORS 468

Stats. Implemented: ORS 468B.048

340-041-0965

Water Quality Standards Not to be Exceeded (To be Adopted Pursuant to ORS 468.735 and Enforceable Pursuant to ORS 468.720, 468.990, and 468.992)

(2) No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Klamath Basin:

(a) Dissolved oxygen (DO): The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

(A) For waterbodies identified by the Department as providing salmonid spawning, during the periods from spawning until fry emergence from the gravels, the following criteria apply:

(i) The dissolved oxygen shall not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;

(ii) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels shall not be less than 95 percent of saturation.

(B) For waterbodies identified by the Department as providing salmonid spawning during the period from spawning until fry emergence from the gravels, the spatial median intergravel dissolved oxygen concentration shall not fall below 6.0 mg/l;

(C) A spatial median of 8.0 mg/l intergravel dissolved oxygen level shall be used to identify areas where the recognized beneficial use of salmonid spawning, egg incubation and fry emergence from the egg and from the gravels may be impaired and therefore require action by the Department. Upon determination that the spatial median intergravel dissolved oxygen concentration is below 8.0 mg/l, the Department may, in accordance with priorities established by the Department for evaluating water quality impaired waterbodies, determine whether to list the waterbody as water quality limited under the Section 303(d) of the Clean Water Act, initiate pollution control strategies as warranted, and where needed cooperate with appropriate designated management agencies to evaluate and implement necessary best management practices for nonpoint source pollution control;

(D) For waterbodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen shall not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen shall not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and shall not fall below 6.0 mg/l as an absolute minimum (**Table 21**);

(E) For waterbodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen shall not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(F) For waterbodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen shall not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen shall not fall below 5.5 mg/l as a 30-day mean minimum, and shall not fall below 4.0 mg/l as an absolute minimum (**Table 21**);

(b) Temperature: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply. The method for measuring the numeric temperature criteria specified in this rule is defined in OAR 340-041-0006(54):

(A) To accomplish the goals identified in OAR 340-041-0120(11), unless specifically allowed under a Department-approved surface water temperature management plan as required under OAR 340-041-0026(3)(a)(D), no measurable surface water temperature increase resulting from anthropogenic activities is allowed:

(i) In a basin for which salmonid fish rearing is a designated beneficial use, and in which surface water temperatures exceed 64.0°F (17.8°C);

(ii) In waters and periods of the year determined by the Department to support native salmonid spawning, egg incubation, and fry emergence from the egg and from the gravels in a basin which exceeds 55.0°F (12.8°C);

(iii) In waters determined by the Department to support or to be necessary to maintain the viability of native Oregon bull trout, when surface water temperatures exceed 50.0°F (10.0°C);

(iv) In waters determined by the Department to be ecologically significant cold-water refugia;

(v) In stream segments containing federally listed Threatened and Endangered species if the increase would impair the biological integrity of the Threatened and Endangered population;

(vi) In Oregon waters when the dissolved oxygen (DO) levels are within 0.5 mg/l or 10 percent saturation of the water column or intergravel DO criterion for a given stream reach or subbasin;

(vii) In natural lakes.

(C) Any source may petition the Commission for an exception to subparagraphs (A)(i) through (vii) of this subsection for discharge above the identified criteria if:

(i) The source provides the necessary scientific information to describe how the designated beneficial uses would not be adversely impacted; or

(ii) A source is implementing all reasonable management practices or measures; its activity will not significantly affect the beneficial uses; and the environmental cost of treating the parameter to the level necessary to assure full protection would outweigh the risk to the resource.

(c) Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities shall be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

(A) Emergency activities: Approval coordinated by DEQ with the Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;

(B) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of Section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate;

(d) pH (hydrogen ion concentration): pH values shall not fall outside the ranges identified in paragraphs (A) and (B) of this subsection. The following exception applies: Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria shall not be considered in violation of the standard if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria:

(A) Fresh waters except Cascade lakes: pH values shall not fall outside the range of 6.5 – 9.0. When greater than 25 percent of ambient measurements taken between June and September are greater than pH 8.7, and as resources are available according to priorities set by the Department, the Department shall determine whether the values higher than 8.7 are anthropogenic or natural in origin;

(B) Cascade lakes above 5,000 feet altitude: pH values shall not fall outside the range of 6.0 to 8.5.

(e) Bacteria standards:

(A) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) shall not exceed the criteria described in subparagraphs (i) and (ii) of this paragraph. Freshwaters:

(i) A 30-day log mean of 126 *E. coli* organisms per 100 ml, based on a minimum of five (5) samples;

(ii) No single sample shall exceed 406 *E. coli* organisms per 100 ml.

(B) Raw Sewage Prohibition: No sewage shall be discharged into or in any other manner be allowed to enter the waters of the State unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(C) Animal Waste: Runoff contaminated with domesticated animal wastes shall be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(f) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation or otherwise injurious to public health shall not be allowed;

(g) The liberation of dissolved gases, such as carbon dioxide, hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such waters shall not be allowed;

(h) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or which are injurious to health, recreation, or industry shall not be allowed;

(i) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish shall not be allowed;

(j) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry shall not be allowed;

(k) Objectionable discoloration, scum, oily sleek or floating solids, or coating of aquatic life with oil films shall not be allowed;

(l) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch shall not be allowed;

(m) Radioisotope concentrations shall not exceed maximum permissible concentration (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;

(n) The concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 110 percent of saturation, except when stream flow exceeds the ten-year, seven-day average flood. However, for Hatchery receiving waters and waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection shall not exceed 105 percent of saturation;

(o) Total Dissolved Solids: Guide concentrations listed below shall not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0962: Mainstem Klamath River from Klamath Lake to the Oregon-California Border (river miles 255 to 208.5): The specific conductance shall not exceed 400 micromhos at 77° F. when measured at the Oregon-California Border (river mile 208.5);

(p) Toxic Substances:

(A) Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses;

(B) Levels of toxic substances shall not exceed the criteria listed in **Table 20** which were based on criteria established by EPA and published in **Quality Criteria for Water (1986)**, unless otherwise noted;

(C) The criteria in paragraph (B) of this subsection shall apply unless data from scientifically valid studies demonstrate that the most sensitive designated beneficial uses will not be adversely affected by exceeding a criterion or that a more restrictive criterion is warranted to protect beneficial uses, as accepted by the Department on a site specific basis. Where no published EPA criteria exist for a toxic substance, public health

advisories and other published scientific literature may be considered and used, if appropriate, to set guidance values;

(D) Bio-assessment studies such as laboratory bioassays or instream measurements of indigenous biological communities, shall be conducted, as the Department deems necessary, to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria, to aquatic life. These studies, properly conducted in accordance with standard testing procedures, may be considered as scientifically valid data for the purposes of paragraph (C) of this subsection. If toxicity occurs, the Department shall evaluate and implement measures necessary to reduce toxicity on a case-by-case basis.

(3) Where the naturally occurring quality parameters of waters of the Klamath basin are outside the numerical limits of the above assigned water quality standards, the naturally occurring water quality shall be the standard. However, in such cases special restrictions, described in OAR 340-041-0026(3)(a)(C)(iii), apply to discharges that affect dissolved oxygen.

(4) Mixing zones:

(a) The Department may allow a designated portion of a receiving water to serve as a zone of dilution for wastewaters and receiving waters to mix thoroughly and this zone will be defined as a mixing zone;

(b) The Department may suspend all or part of the water quality standards, or set less restrictive standards, in the defined mixing zone, provided that the following conditions are met:

(A) The water within the mixing zone shall be free of:

(i) Materials in concentrations that will cause acute toxicity to aquatic life as measured by a Department approved bioassay method. Acute toxicity is lethality to aquatic life as measured by a significant difference in lethal concentration between the control and 100 percent effluent in an acute bioassay test. Lethality in 100 percent effluent may be allowed due to ammonia and chlorine only when it is demonstrated on a case-by-case basis that immediate dilution of the effluent within the mixing zone reduces toxicity below lethal concentrations. The Department may on a case-by-case basis establish a zone of immediate dilution if appropriate for other parameters;

(ii) Materials that will settle to form objectionable deposits;

(iii) Floating debris, oil, scum, or other materials that cause nuisance conditions;

(iv) Substances in concentrations that produce deleterious amounts of fungal or bacterial growths.

(B) The water outside the boundary of the mixing zone shall:

(i) Be free of materials in concentrations that will cause chronic (sublethal) toxicity. Chronic toxicity is measured as the concentration that causes long-term sublethal effects, such as significantly impaired growth or reproduction in aquatic organisms, during a testing period based on test species life cycle. Procedures and end points will be specified by the Department in wastewater discharge permits;

(ii) Meet all other water quality standards under normal annual low flow conditions.

(c) The limits of the mixing zone shall be described in the wastewater discharge permit. In determining the location, surface area, and volume of a mixing zone area, the Department may use appropriate mixing zone guidelines to assess the biological, physical, and chemical character of receiving waters, and effluent, and the most appropriate placement of the outfall, to protect instream water quality, public health, and other beneficial uses. Based on receiving water and effluent characteristics, the Department shall define a mixing zone in the immediate area of a wastewater discharge to:

(A) Be as small as feasible;

(B) Avoid overlap with any other mixing zones to the extent possible and be less than the total stream width as necessary to allow passage of fish and other aquatic organisms;

(C) Minimize adverse effects on the indigenous biological community especially when species are present that warrant special protection for their economic importance, tribal significance, ecological uniqueness, or for other similar reasons as determined by the Department and does not block the free passage of aquatic life;

(D) Not threaten public health;

(E) Minimize adverse effects on other designated beneficial uses outside the mixing zone.

(d) The Department may request the applicant of a permitted discharge for which a mixing zone is required, to submit all information necessary to define a mixing zone, such as:

(A) Type of operation to be conducted;

(B) Characteristics of effluent flow rates and composition;

(C) Characteristics of low flows of receiving waters;

(D) Description of potential environmental effects;

(E) Proposed design for outfall structures.

(e) The Department may, as necessary, require mixing zone monitoring studies and/or bioassays to be conducted to evaluate water quality or biological status within and outside the mixing zone boundary;

(f) The Department may change mixing zone limits or require the relocation of an outfall if it determines that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waters.

(g) **Alternate requirements for mixing zones:** For some existing or proposed discharges to some receiving streams, it may not be practicable to treat wastewater to meet instream water quality standards at the point of discharge or within a short distance from the point of discharge. Some of these discharges could be allowed without impairing the overall ecological integrity of the receiving streams, or may provide an overall benefit to the receiving stream. This section specifies the conditions and circumstances under which a mixing zone may be allowed by the Department that extends beyond the immediate area around a discharge point, or that extends across a stream width. An alternate mixing zone may be approved if the applicant demonstrates to the Department's satisfaction that the discharge (A) creates an overall environmental benefit, or (B) is to a constructed water course, or (C) is insignificant. The three circumstances under which alternate mixing zones may be established are described further below.

(A) Overall environmental benefit.

(i) Qualifying for alternate mixing zone based on overall environmental benefit: In order to qualify for an alternate mixing zone based on a finding of overall environmental benefit, the discharger must demonstrate to the Department's satisfaction the following:

(I) That all practical strategies have been or will be implemented to minimize the pollutant loads in the effluent; and

(II) For proposed increased discharges, the current actual discharge and mixing zone does not meet the requirements of a standard mixing zone; and

(III) Either that, on balance, an environmental benefit would be lost if the discharge did not occur, or that the discharger is prepared to undertake other actions that will mitigate the effect of the discharge to an extent resulting in a net environmental benefit to the receiving stream.

(IV) For the purposes of this rule, the term "practical" shall include environmental impact, availability of alternatives, cost of alternatives, and other relevant factors.

(ii) Studies required and evaluation of studies: In order to demonstrate that, on balance, an environmental benefit will result from the discharge, the following information shall be provided by the applicant:

(I) The effluent flow and pollutant loads that are detected or expected in the effluent, by month, both average and expected worst case discharges. The parameters to be evaluated include at a minimum temperature, biochemical oxygen demand, total suspended solids, total dissolved solids, pH, settleable solids, e. coli bacteria, oil and grease, any pollutants listed in Table 20 of this rule division, and any pollutant for which the receiving stream has been designated by the Department as water quality limited; and

(II) Receiving stream flow, by month; and

(III) The expected impact of the discharge, by month, on the receiving stream for the entire proposed mixing zone area for all of the pollutants listed above. Included in this analysis shall be a comparison of the receiving stream water quality with the discharge and without the discharge; and

(IV) A description of fish, other vertebrate populations, and macroinvertebrates that reside in or are likely to pass through the proposed mixing zone, including expected location (if known), species identification, stage of development, and time of year when their presence is expected. For existing discharges, the applicant shall provide the same information for similar nearby streams that are unaffected by wastewater discharges. In addition, any threatened or endangered species in the immediate vicinity of the receiving stream shall be identified; and

(V) The expected impact of the discharge on aquatic organisms and/or fish passage, including any expected negative impacts from the effluent attracting fish where that is not desirable; and

(VI) A description of the expected environmental benefits to be derived from the discharge or other mitigation measures proposed by the applicant, including but not limited to improvements in water quality, improvements in fish passage, and improvements in aquatic habitat. If the applicant proposes to undertake mitigation measures designed to provide environmental benefits (e.g., purchasing water or water conservation rights to increase stream flows or establishing stream cover to decrease temperature), the applicant shall describe the mitigation measures in detail, including a description of the steps it will take to ensure that the benefits of the mitigation measures are attained and are not lost or diminished over time.

(VII) Some or all of the above study requirements may be waived by the Department, if the Department determines that the information is not needed. In the event that the Department does waive some or all of the above study requirements, the basis for waiving the requirements will be included in the permit evaluation report upon the next permit renewal or modification relating to the mixing zone.

(VIII) Upon request of the Department, the applicant shall conduct additional studies to further evaluate the impact of the discharge, which may include whole effluent toxicity testing, stream surveys for water quality, stream surveys for fish and other aquatic organisms, or other studies as specified by the Department.

(IX) In evaluating whether an existing or proposed increase in an existing discharge would result in a net environmental benefit, the applicant shall use the native biological community in a nearby, similar stream that is unaffected by wastewater discharges. The Department shall consider all information generated as required in this rule and other relevant information. The evaluation shall consider benefits to the native aquatic biological community only.

(iii) Permit conditions: Upon determination by the Department that the discharge and mitigation measures (if any) will likely result in an overall environmental benefit, the Department shall include appropriate permit conditions to insure that the environmental benefits are attained and continue. Such permit conditions may include but not be limited to:

(I) Maximum allowed effluent flows and pollutant loads;

(II) Requirements to maintain land ownership, easements, contracts, or other legally binding measures necessary to assure that mitigation measures, if any, remain in place and effective;

(III) Special operating conditions;

(IV) Monitoring and reporting requirements; and

(V) Studies to evaluate the effectiveness of mitigation measures.

(B) **Constructed water course:** A mixing zone may be extended through a constructed water course and into a natural water course. For the purposes of this rule, a constructed water course is one that was constructed for irrigation, site drainage, or wastewater conveyance, and has the following characteristics:

(i) Irrigation flows, stormwater runoff, or wastewater flows have replaced natural streamflow regimes; and

(ii) The channel form is greatly simplified in lengthwise and cross sectional profiles; and

(iii) Physical and biological characteristics that differ significantly from nearby natural streams; and

(iv) A much lower diversity of aquatic species than found in nearby natural streams; and

(v) If the constructed water course is an irrigation canal, then it must have effective fish screens in place to qualify as a constructed water course.

(C) **Insignificant discharges:** Insignificant discharges are those that either by volume, pollutant characteristics, and/or temporary nature are expected to have little if any impact on beneficial uses in the receiving stream, and for which the extensive evaluations

required for discharges to smaller streams are not warranted. For the purposes of this rule, only filter backwash discharges and underground storage tank cleanups are considered insignificant discharges.

(D) Other requirements for alternate mixing zones: The following are additional requirements for dischargers requesting an alternate mixing zone:

(i) Most discharges that qualify for an alternate mixing zone will extend through the receiving stream until a larger stream is reached, where thorough mixing of the effluent can occur and where the edge of the allowed mixing zone will be located. The portion of the mixing zone in the larger stream must meet all of the requirements of the standard mixing zone, including not blocking aquatic life passage; and

(ii) An alternate mixing zone shall not be granted if a municipal drinking water intake is located within the proposed mixing zone, and the discharge has a significant adverse impact on the drinking water source; and

(iii) The discharge will not pose an unreasonable hazard to the environment or pose a significant health risk, considering the likely pathways of exposure; and

(iv) The discharge shall not be acutely toxic to organisms passing through the mixing zone; and

(v) An alternate mixing zone shall not be granted if the substances discharged may accumulate in the sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses; and

(vi) In the event that the receiving stream is water quality limited, the requirements for discharges to water quality limited streams supersede this rule.

[ED. NOTE: The Table(s) referenced in this rule is not printed in the OAR Compilation. Copies are available from the agency.]

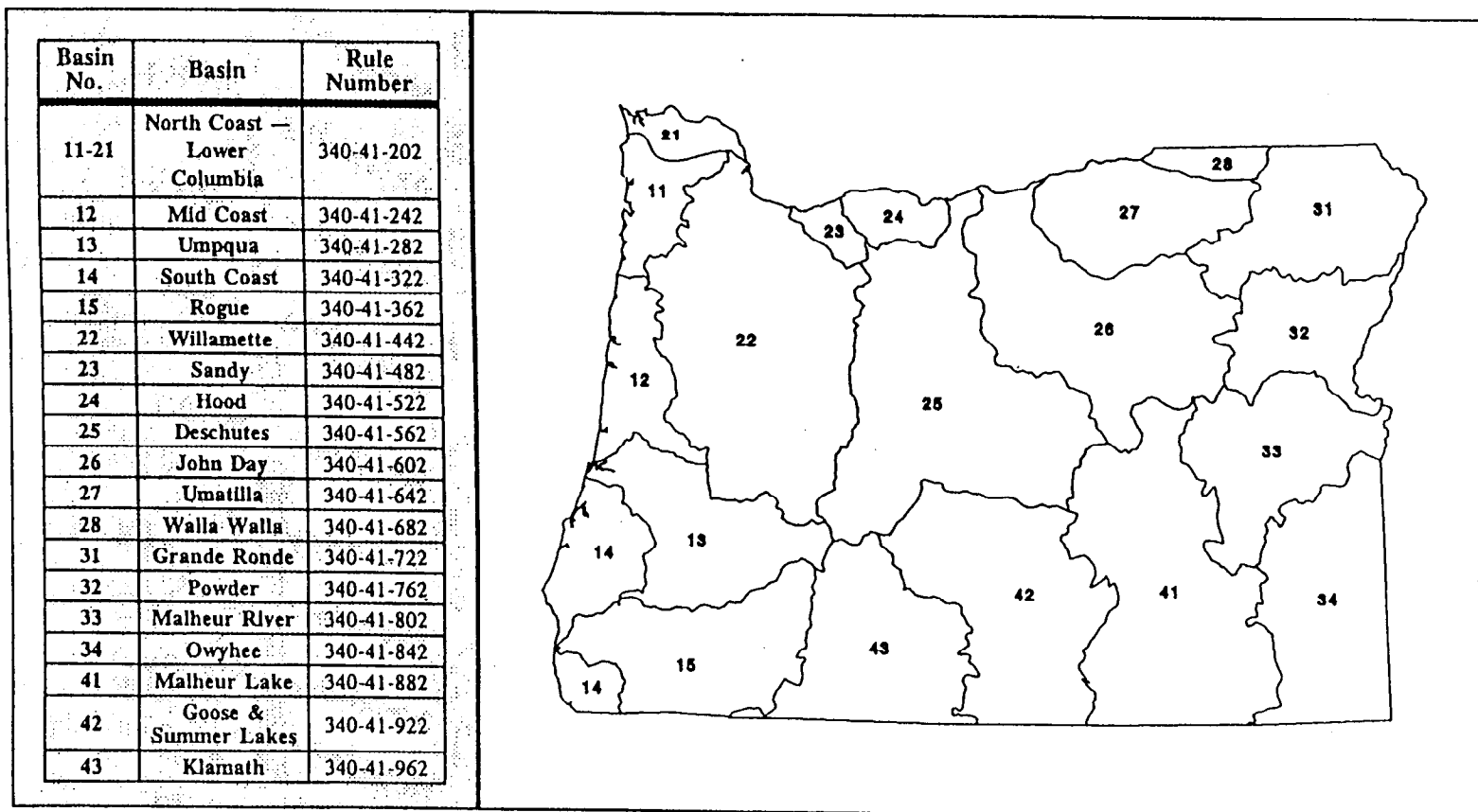
[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the agency.]

Stat. Auth.: ORS 468.735, ORS 468B.035 & ORS 468B.048

Stats. Implemented: ORS 468B.048

Hist.: DEQ 128, f. & ef. 1-21-77; DEQ 1-1980, f. & ef. 1-9-80; DEQ 18-1987, f. & ef. 9-4-87; DEQ 14-1991, f. & cert. ef. 8-13-91; DEQ 17-1992, f. & cert. ef. 8-7-92 (and corrected 8-13-92); DEQ 21-1995(Temp), f. & cert. ef. 9-21-95; DEQ 5-1996, f. & cert. ef. 3-7-96; DEQ 22-1997, f. & cert. ef. 10-24-97

FIGURE 1
BASIN INDEX MAP



SA\Table\WH5267.5

OREGON DRAINAGE BASINS

FIGURE 2

**NORTH COAST — LOWER COLUMBIA BASIN
(340-41-202)**

(Note: Basin Boundaries are as shown in figure below.)

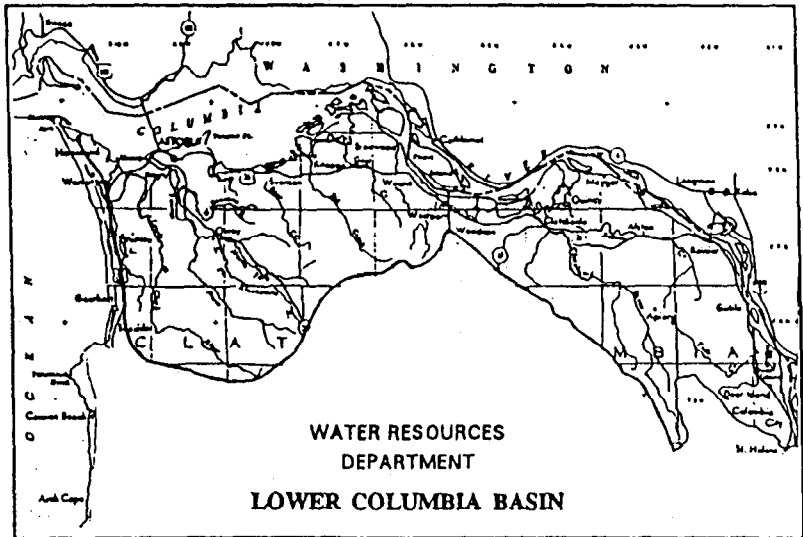
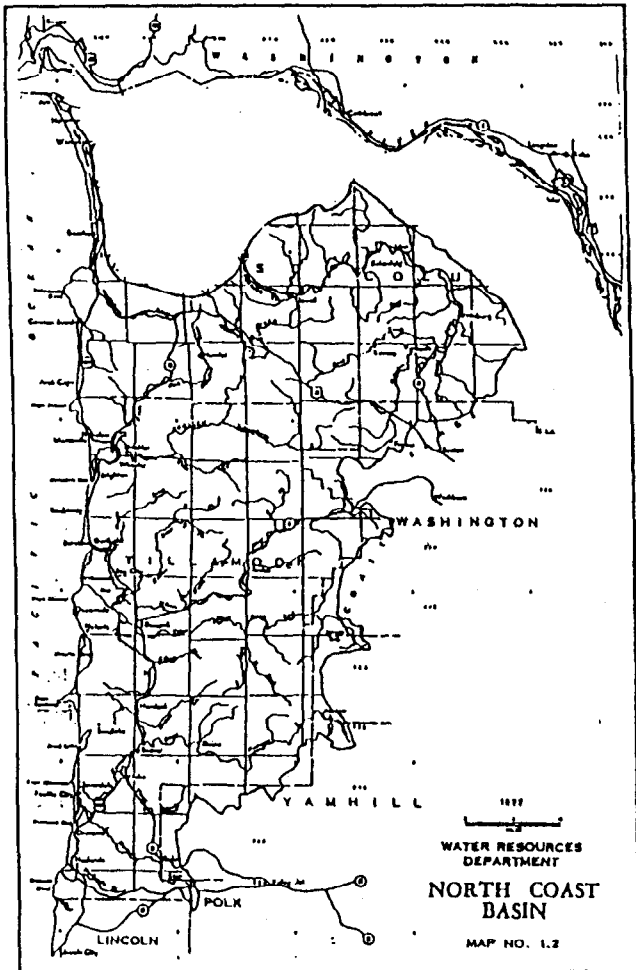


TABLE 1

**NORTH COAST — LOWER COLUMBIA BASIN
(340-41-202)**

Beneficial Uses	Estuaries and Adjacent Marine Waters	Columbia River Mouth to RM 86	All Other Streams & Tributaries Thereto
Public Domestic Water Supply ¹		X	X
Private Domestic Water Supply ¹		X	X
Industrial Water Supply	X	X	X
Irrigation		X	X
Livestock Watering		X	X
Anadromous Fish Passage	X	X	X
Salmonid Fish Rearing	X	X	X
Salmonid Fish Spawning	X	X	X
Resident Fish & Aquatic Life	X	X	X
Wildlife & Hunting	X	X	X
Fishing	X	X	X
Boating	X	X	X
Water Contact Recreation	X	X	X
Aesthetic Quality	X	X	X
Hydro Power			
Commercial Navigation & Transportation	X	X	
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.			

SANTable\WH5288.5

FIGURE 3

MID COAST BASIN
(340-41-242)

(Note: Basin Boundaries are as shown in figure below.)

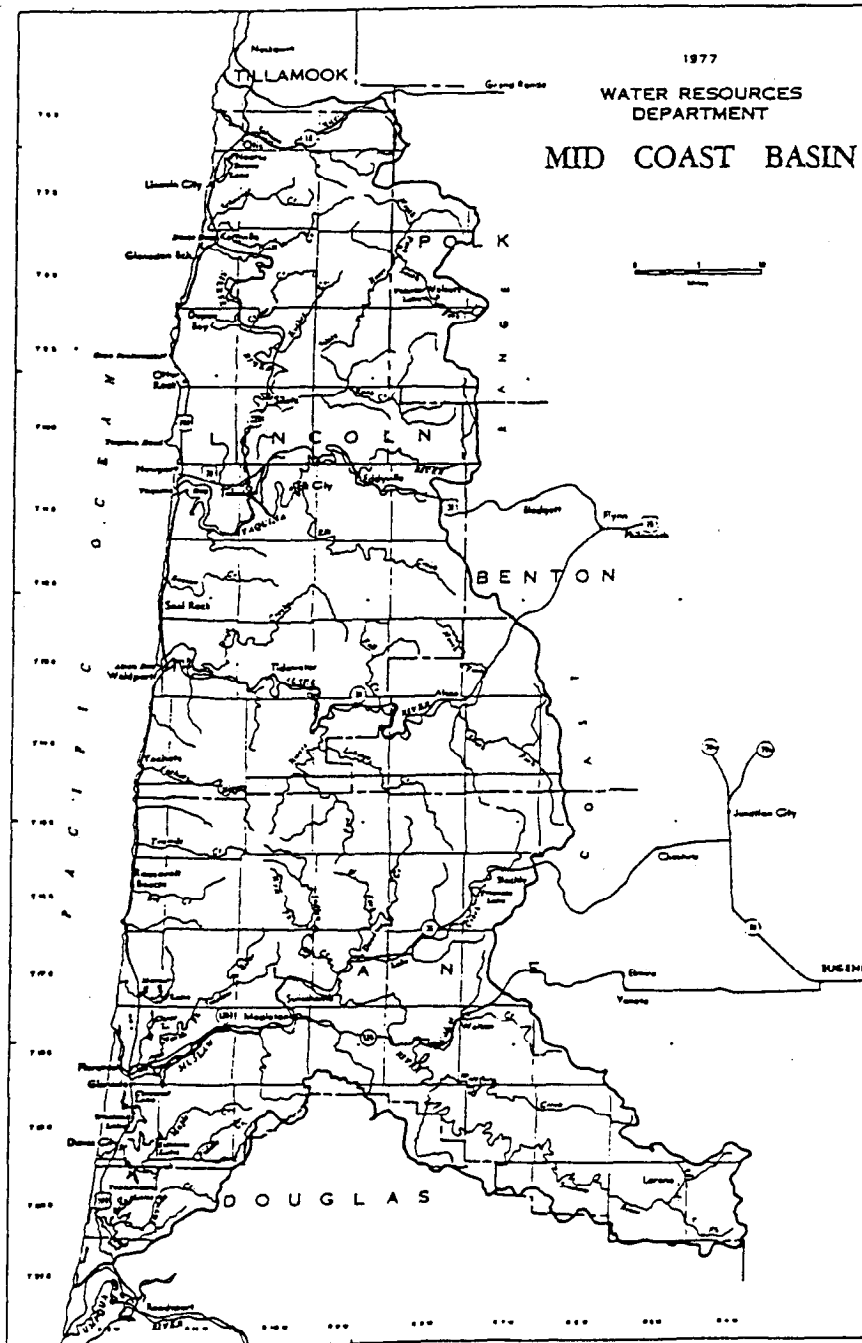


TABLE 2
MID COAST BASIN
(340-41-242)

Beneficial Uses	Estuaries & Adjacent Marine Waters	Fresh Waters
Public Domestic Water Supply ¹		X
Private Domestic Water Supply ¹		X
Industrial Water Supply	X	X
Irrigation		X
Livestock Watering		X
Anadromous Fish Passage	X	X
Salmonid Fish Rearing	X	X
Salmonid Fish Spawning	X	X
Resident Fish & Aquatic Life	X	X
Wildlife & Hunting	X	X
Fishing	X	X
Boating	X	X
Water Contact Recreation	X	X
Aesthetic Quality	X	X
Hydro Power		X
Commercial Navigation & Transportation	X	
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.		

SA\Table\WH5289.5.

FIGURE 4

UMPQUA BASIN
(340-41-282)

(Note: Basin Boundaries are as shown in figure below.)

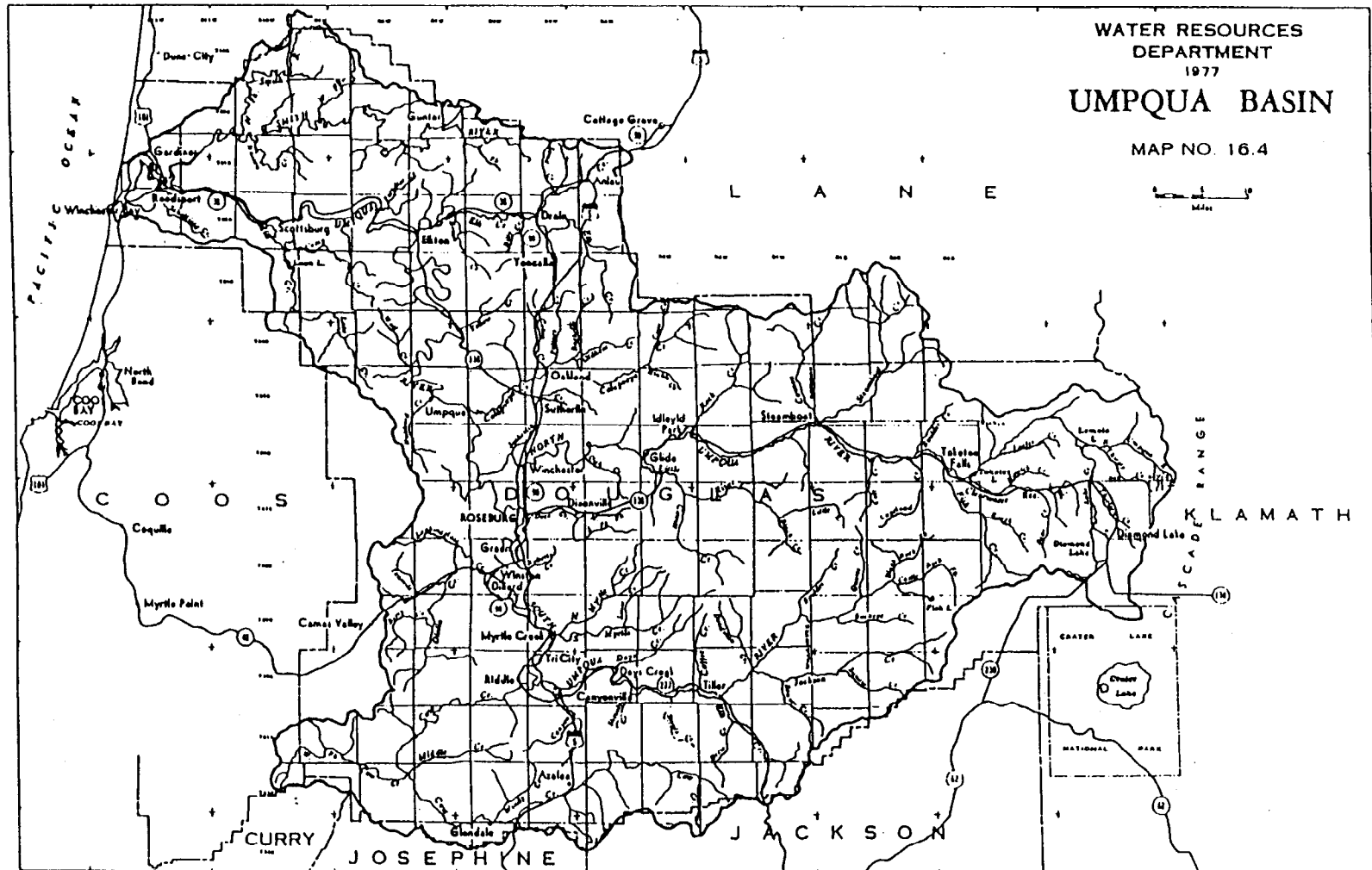


TABLE 3
UMPQUA BASIN
(340-41-282)

Beneficial Uses	Umpqua R. Estuary to Head of Tidewater and Adjacent Marine Waters	Umpqua R. Main Stem from Head of Tidewater to Confluence of N. & S. Umpqua Rivers	North Umpqua River Main Stem	South Umpqua River Main Stem	All Other Tributaries to Umpqua, North & South Umpqua Rivers
Public Domestic Water Supply ¹		X	X	X	X
Private Domestic Water Supply ¹		X	X	X	X
Industrial Water Supply	X	X	X	X	X
Irrigation		X	X	X	X
Livestock Watering		X	X	X	X
Anadromous Fish Passage	X	X	X	X	X
Salmonid Fish Rearing	X	X	X	X	X
Salmonid Fish Spawning		X	X	X	X
Resident Fish & Aquatic Life	X	X	X	X	X
Wildlife & Hunting	X	X	X	X	X
Fishing	X	X	X	X	X
Boating	X	X	X	X	X
Water Contact Recreation	X	X	X	X	X
Aesthetic Quality	X	X	X	X	X
Hydro Power			X	X	X
Commercial Navigation & Transportation	X				
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.					

SA\Table\WH5290.5

FIGURE 5

SOUTH COAST BASIN
(340-41-322)

(Note: Basin Boundaries are as shown in figure below.)

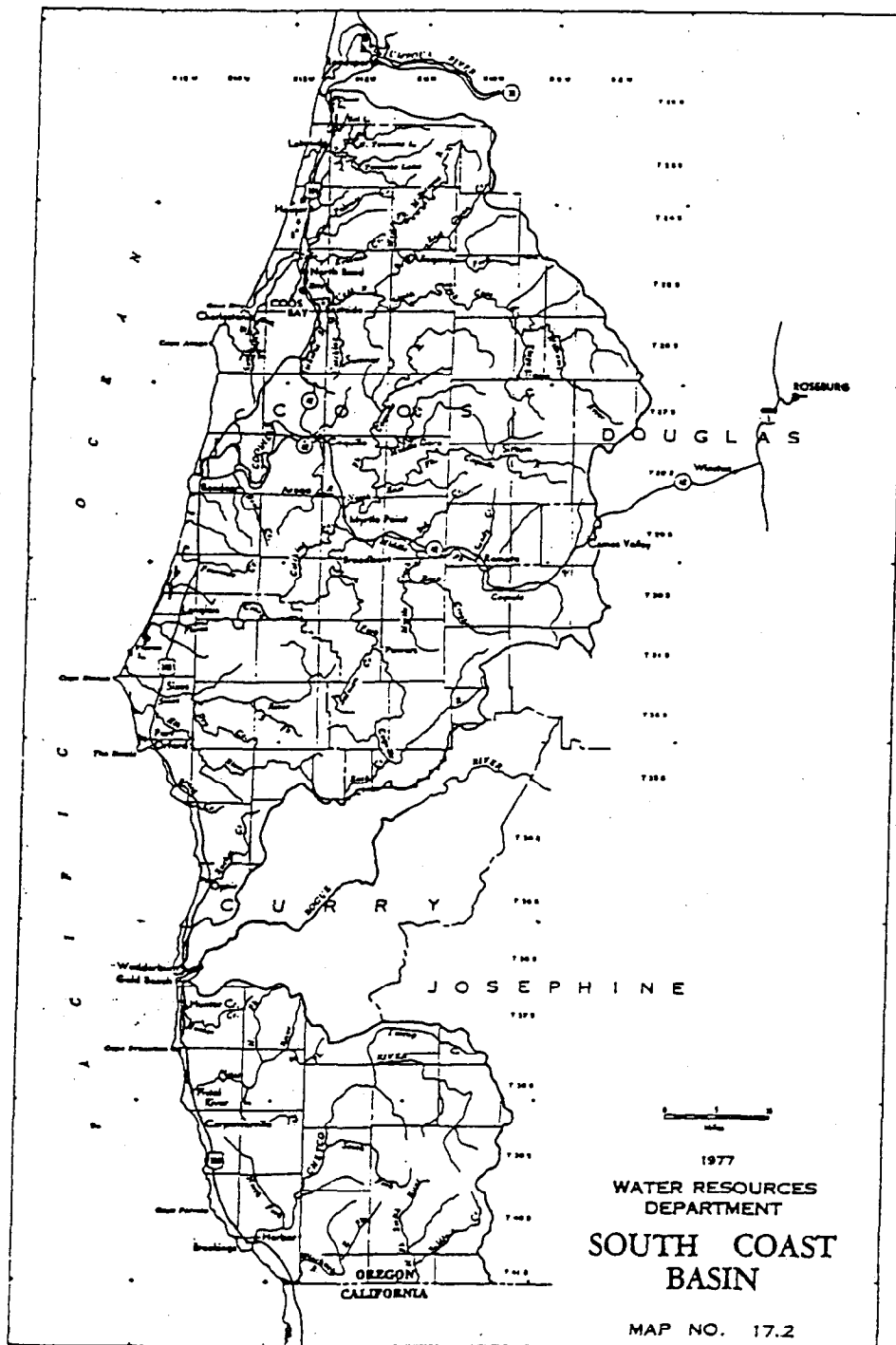


TABLE 4
SOUTH COAST BASIN
(340-41-322)

Beneficial Uses	Estuaries and Adjacent Marine Waters	All Streams & Tributaries Thereto
Public Domestic Water Supply ¹		X
Private Domestic Water Supply ¹		X
Industrial Water Supply	X	X
Irrigation		X
Livestock Watering		X
Anadromous Fish Passage	X	X
Salmonid Fish Rearing	X	X
Salmonid Fish Spawning	X	X
Resident Fish & Aquatic Life	X	X
Wildlife & Hunting	X	X
Fishing	X	X
Boating	X	X
Water Contact Recreation	X	X
Aesthetic Quality	X	X
Hydro Power		X
Commercial Navigation & Transportation	X	
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.		

SA\Table\WH5291.5

(Note: Basin Boundaries are as shown in figure below.)

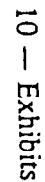


TABLE 5
ROGUE BASIN
(340-41-362)

Beneficial Uses	Rogue River Estuary and Adjacent Marine Waters	Rogue River Main Stem from Estuary to Lost Creek Dam	Rogue River Main Stem above Lost Dam & Tributaries	Bear Creek Main Stem	All Other Tributaries to Rogue River & Bear Creek
Public Domestic Water Supply ¹		X	X	*	X
Private Domestic Water Supply ¹		X	X		X
Industrial Water Supply	X	X	X	X	X
Irrigation		X	X	X	X
Livestock Watering		X	X	X	X
Anadromous Fish Passage	X	X	X	X	X
Salmonid Fish Rearing	X	X	X	X	X
Salmonid Fish Spawning		X	X	X	X
Resident Fish & Aquatic Life	X	X	X	X	X
Wildlife & Hunting	X	X	X	X	X
Fishing	X	X	X	X	X
Boating	X	X	X	X	X
Water Contact Recreation	X	X	X	X	X
Aesthetic Quality	X	X	X	X	X
Hydro Power			X		X
Commercial Navigation & Transportation	X	X			
<p>* Designation for this use is presently under study.</p> <p>¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.</p>					

SA\Table\WH5292.5

FIGURE 7

WILLAMETTE BASIN
(340-41-442)

(Note: Basin Boundaries are as shown in figure below.)

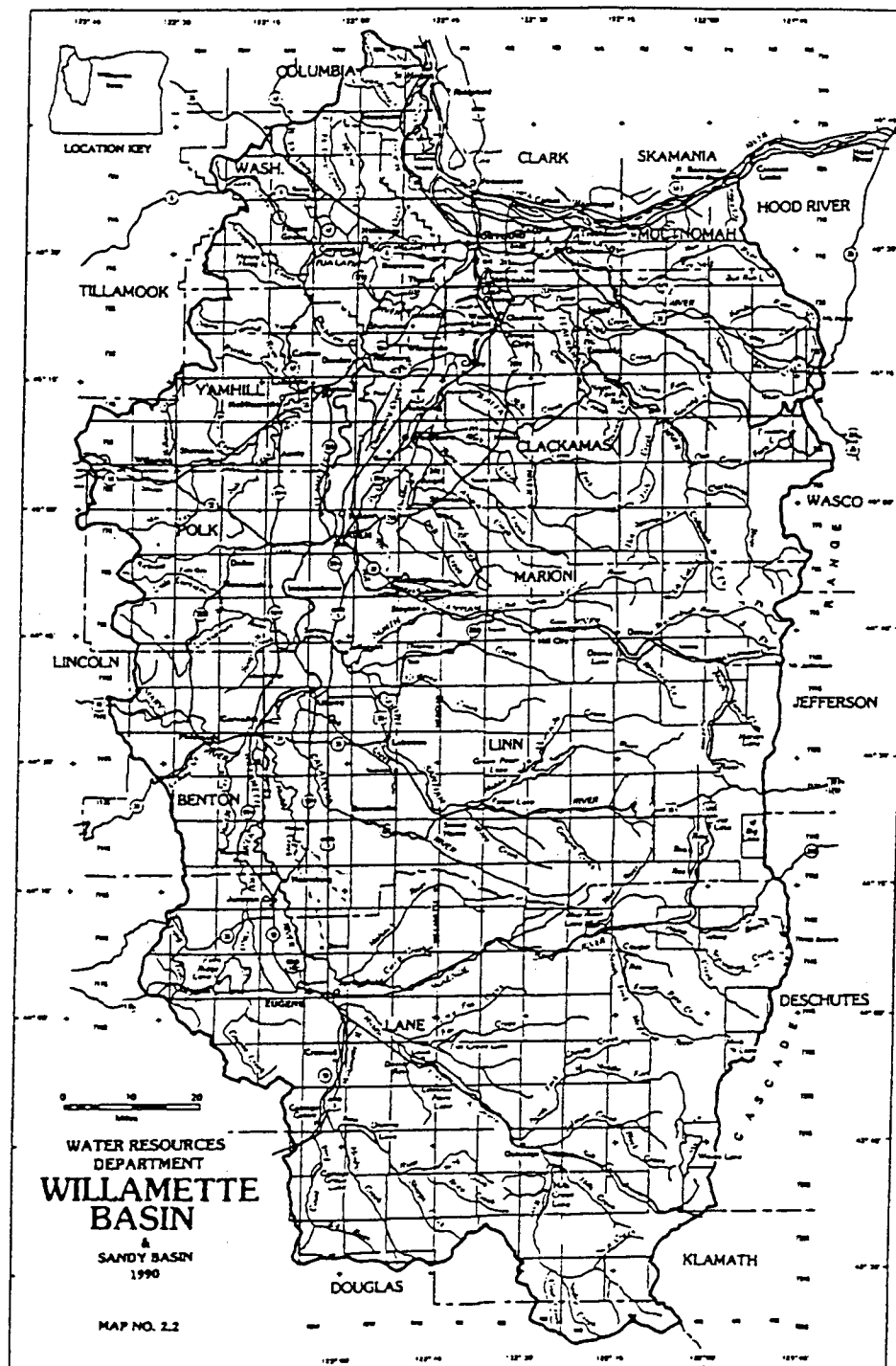


TABLE 6
WILLAMETTE BASIN
(340-41-442)

Beneficial Uses	Willamette River Tributaries						Main Stem Willamette River				
	Clackamas River	Molalla River	Santiam River	McKenzie River	Tualatin River	All Other Streams & Tributaries	Mouth to Willamette Falls, Including Multnomah Channel	Willamette Falls to Newberg	Newberg to Salem	Salem to Coast Fork	Main Stem Columbia River (RM 86 to 120)
Public Domestic Water Supply ¹	X	X	X	X	X	X	X	X	X	X	X
Private Domestic Water Supply ¹	X	X	X	X	X	X	X	X	X	X	X
Industrial Water Supply	X	X	X	X	X	X	X	X	X	X	X
Irrigation	X	X	X	X	X	X	X	X	X	X	X
Livestock Watering	X	X	X	X	X	X	X	X	X	X	X
Anadromous Fish Passage	X	X	X	X	X	X	X	X	X	X	X
Salmonid Fish Rearing	X	X	X	X	X	X	X	X	X	X	X
Salmonid Fish Spawning	X	X	X	X	X	X			X	X	X
Resident Fish & Aquatic Life	X	X	X	X	X	X	X	X	X	X	X
Wildlife & Hunting	X	X	X	X	X	X	X	X	X	X	X
Fishing	X	X	X	X	X	X	X	X	X	X	X
Boating	X	X	X	X	X	X	X	X	X	X	X
Water Contact Recreation	X	X	X	X	X	X	X	X ²	X	X	X
Aesthetic Quality	X	X	X	X	X	X	X	X	X	X	X
Hydro Power	X	X	X	X	X	X	X	X			X
Commercial Navigation & Transportation							X	X	X		X
¹ With adequate pretreatment and natural quality that meets drinking water standards. ² Not to conflict with commercial activities in Portland Harbor.											

SA\Table\WH5293.5

FIGURE 8

**SANDY BASIN
(340-41-482)**

(Note: Basin Boundaries are as shown in figure below.)

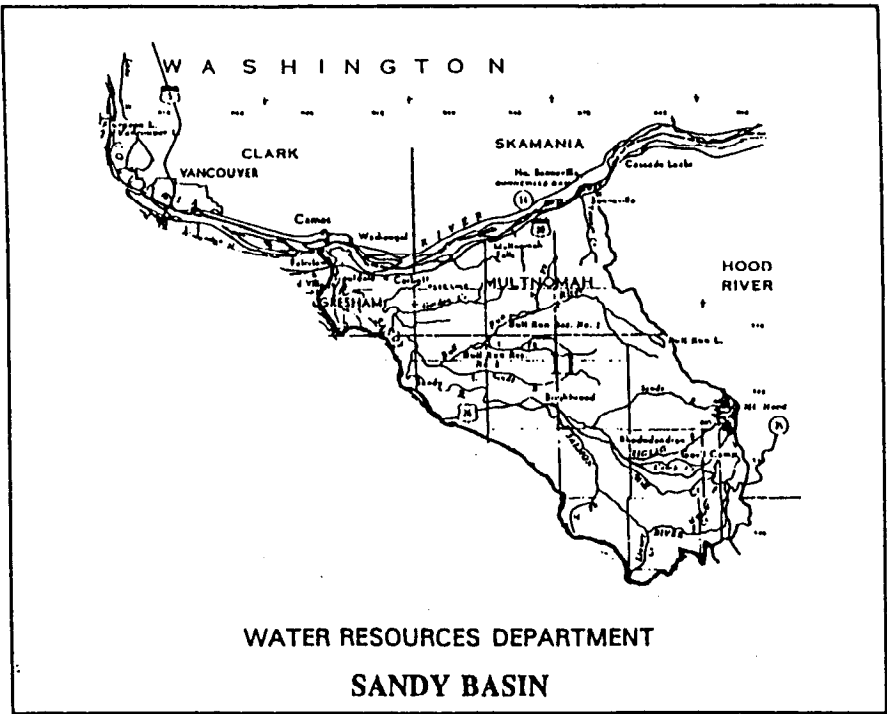


TABLE 7
SANDY BASIN
(340-41-482)

Beneficial Uses	Streams Forming Waterfalls Near Columbia River Highway	Sandy River	Bull Run River and All Tributaries	All Other Tributaries to Sandy River	Columbia River (RM 120 to 147)
Public Domestic Water Supply ¹		X	X	X	X
Private Domestic Water Supply ¹		X		X	X
Industrial Water Supply		X		X	X
Irrigation		X		X	X
Livestock Watering		X		X	X
Anadromous Fish Passage		X	X	X	X
Salmonid Fish Rearing	X	X	X	X	X
Salmonid Fish Spawning	X	X	X		
Resident Fish & Aquatic Life	X	X	X	X	X
Wildlife & Hunting	X	X		X	X
Fishing	X	X		X	X
Boating		X		X	X
Water Contact Recreation	X	X		X	X
Aesthetic Quality	X	X	X	X	X
Hydro Power		X	X	X	X
Commercial Navigation & Transportation					X
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.					

SA\Table\WH5294.5

FIGURE 9

HOOD BASIN
(340-41-522)

(Note: Basin Boundaries are as shown in figure below.)

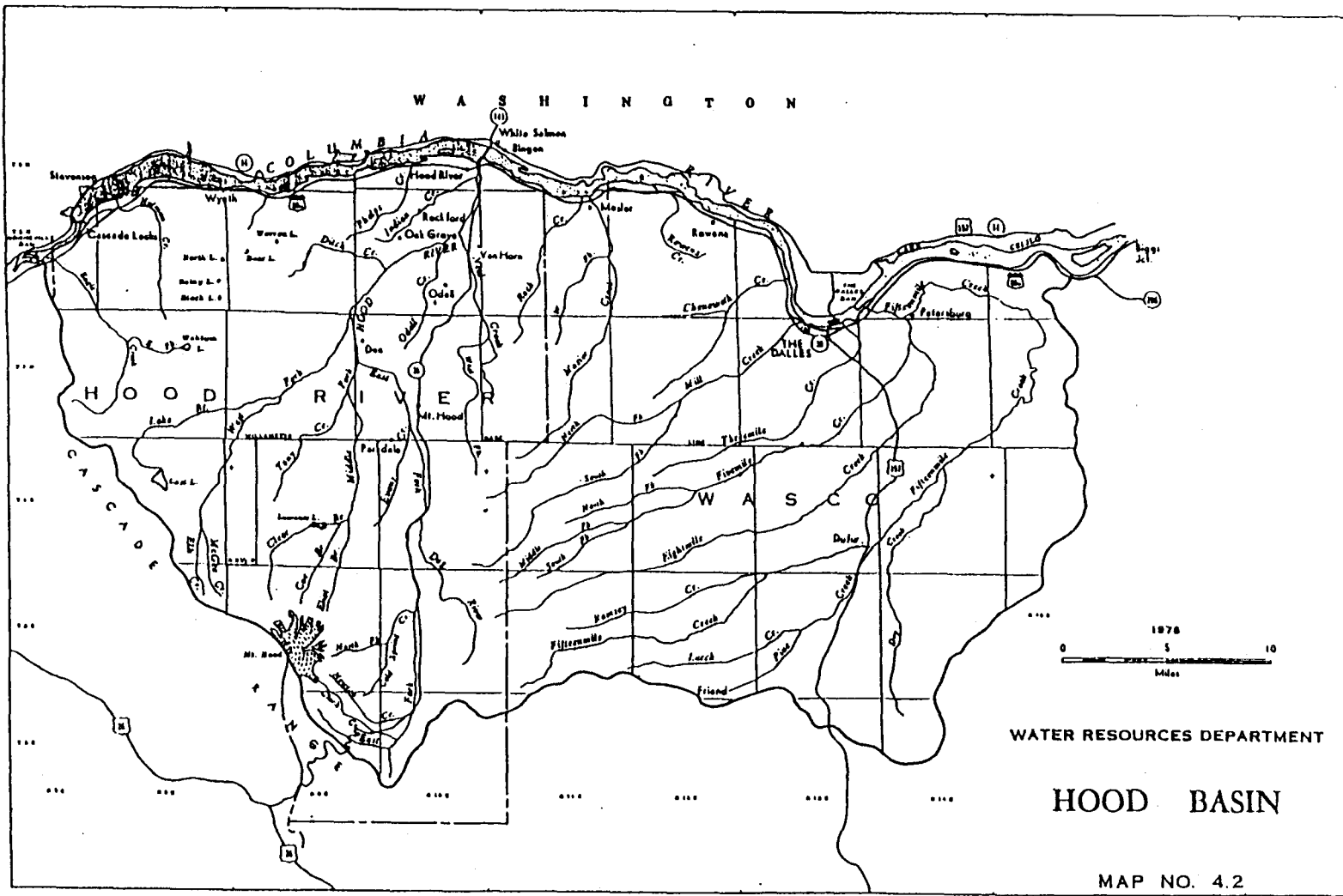


TABLE 8

HOOD BASIN
(340-41-522)

Beneficial Uses	Columbia River (RM 147 to 203)	Other Hood River Basin Streams
Public Domestic Water Supply ¹	X	X
Private Domestic Water Supply ¹	X	X
Industrial Water Supply	X	X
Irrigation	X	X
Livestock Watering	X	X
Anadromous Fish Passage	X	X
Anadromous Fish (Shad & Sturgeon) Spawning & Rearing	X	
Salmonid Fish Rearing	X	X
Salmonid Fish Spawning		X
Resident Fish & Aquatic Life	X	X
Wildlife & Hunting	X	X
Fishing	X	X
Boating	X	X
Water Contact Recreation	X	X
Aesthetic Quality	X	X
Hydro Power	X	X
Commercial Navigation & Transportation	X	
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.		

SA\Table\WH5295.5

FIGURE 10

DESCHUTES BASIN
(340-41-562)

(Note: Basin Boundaries are as shown in figure below.)

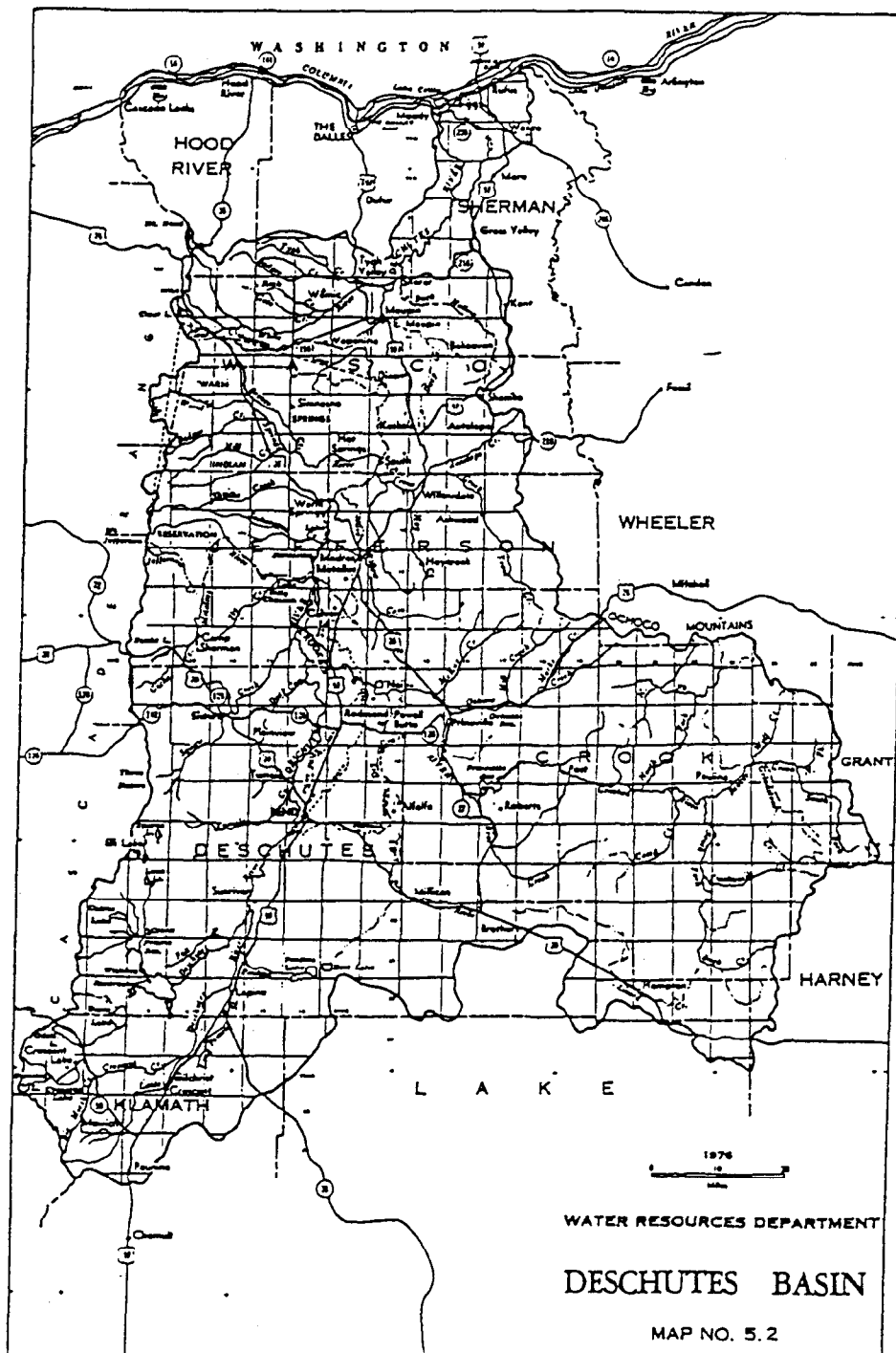


TABLE 9
DESCHUTES BASIN
(340-41-562)

Beneficial Uses	Columbia River (RM 203 to 218)	Deschutes River Main Stem from Mouth to Pelton Regulating Dam	Deschutes River Main Stem from Pelton Regulating Dam to Bend Diversion Dam and for the Crooked River Main Stem	Deschutes River Main Stem above Bend Diversion Dam & for the Metolius River Main Stem	All Other Basin Streams
Public Domestic Water Supply ¹	X	X	X	X	X
Private Domestic Water Supply ¹	X	X	X	X	X
Industrial Water Supply	X	X	X	X	X
Irrigation	X	X	X	X	X
Livestock Watering	X	X	X	X	X
Anadromous Fish Passage	X	X	X	X	X
Salmonid Fish Rearing	X	X	X	X	X
Salmonid Fish Spawning		X	X	X	X
Resident Fish & Aquatic Life	X	X	X	X	X
Wildlife & Hunting	X	X	X	X	X
Fishing	X	X	X	X	X
Boating	X	X	X	X	X
Water Contact Recreation	X	X	X	X	X
Aesthetic Quality	X	X	X	X	X
Hydro Power	X		X		
Commercial Navigation & Transportation	X				
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.					

SA\Table\WH5296.5

JOHN DAY BASIN
(340-41-602)

20 – Exhibits

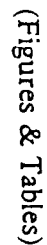


TABLE 10
JOHN DAY BASIN
(340-41-602)

Beneficial Uses	Columbia River (RM 218 to 247)	John Day River & All Tributaries
Public Domestic Water Supply ¹	X	X
Private Domestic Water Supply ¹	X	X
Industrial Water Supply	X	X
Irrigation	X	X
Livestock Watering	X	X
Anadromous Fish Passage	X	X
Salmonid Fish Rearing	X	X
Salmonid Fish Spawning	X	X
Resident Fish & Aquatic Life	X	X
Wildlife & Hunting	X	X
Fishing	X	X
Boating	X	X
Water Contact Recreation	X	X
Aesthetic Quality	X	X
Hydro Power	X	
Commercial Navigation & Transportation	X	
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.		

SA\Table\WH5297.5

FIGURE 12

UMATILLA BASIN
(340-41-642)

(Note: Basin Boundaries are as shown in figure below.)

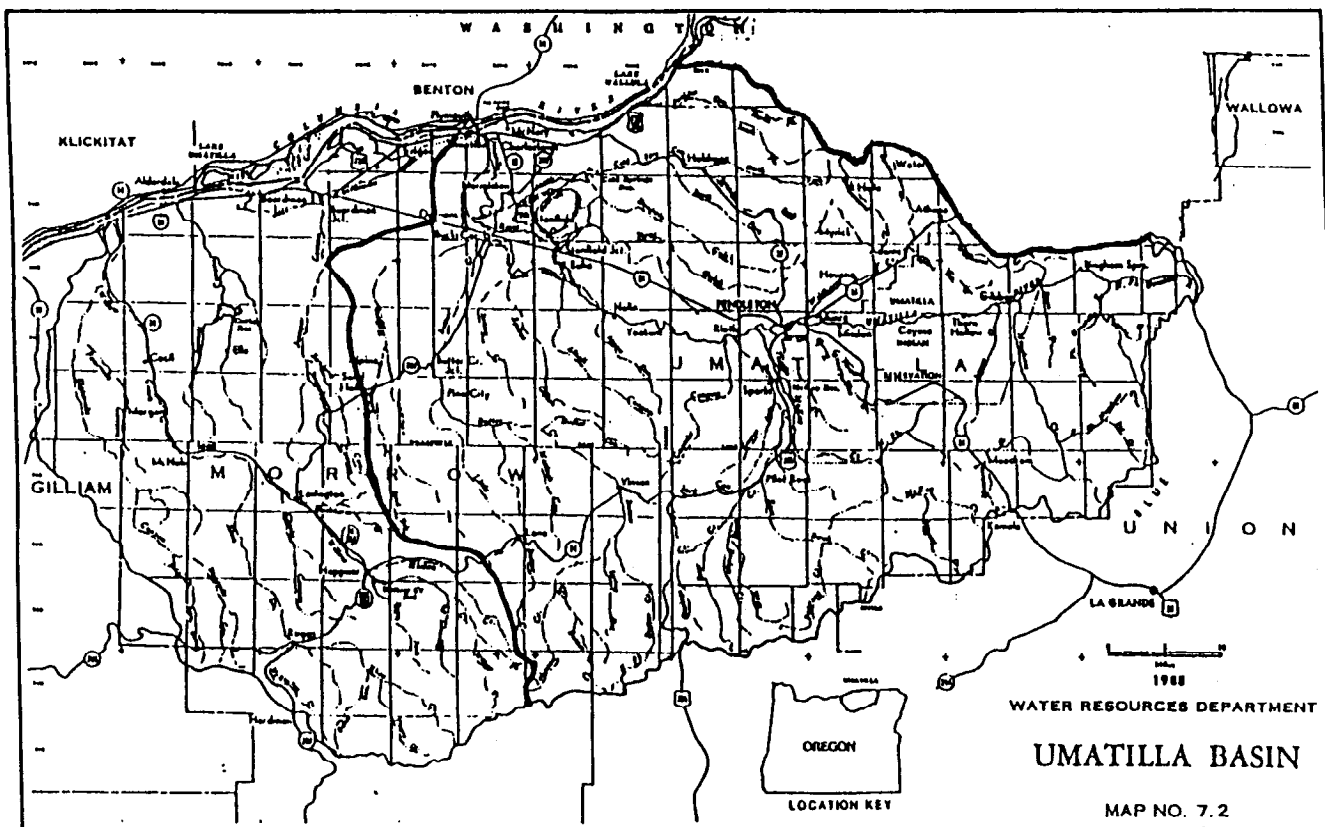


TABLE 11
UMATILLA BASIN
(340-41-642)

Beneficial Uses	Umatilla Subbasin	Willow Creek Subbasin	Main Stem Columbia River (RM 247 to 309)
Public Domestic Water Supply ¹	X	X	X
Private Domestic Water Supply ¹	X	X	X
Industrial Water Supply	X	X	X
Irrigation	X	X	X
Livestock Watering	X	X	X
Anadromous Fish Passage	X		X
Salmonid Fish Rearing (Trout)	X	X	X
Salmonid Fish Spawning (Trout)	X	X	X
Resident Fish & Aquatic Life	X	X	X
Wildlife & Hunting	X	X	X
Fishing	X	X	X
Boating	X	X (at mouth)	X
Water Contact Recreation	X	X	X
Aesthetic Quality	X	X	X
Hydro Power	X	X	X
Commercial Navigation & Transportation			X
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.			

SA\Table\WH5298.5

FIGURE 13

WALLA WALLA BASIN
(340-41-682)

(Note: Basin Boundaries are as shown in figure below.)

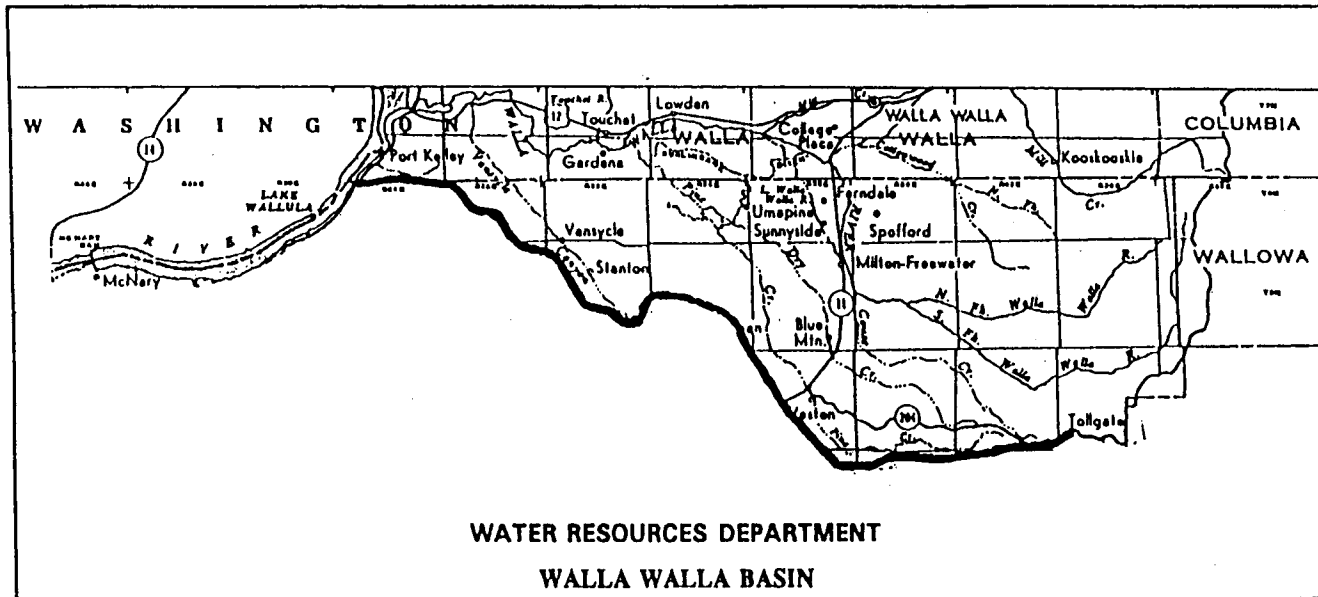


TABLE 12
WALLA WALLA BASIN
(340-41-682)

Beneficial Uses	Walla Walla River Main Stem from Confluence of North and South Forks to State Line	All Other Basin Streams
Public Domestic Water Supply ¹	X	X
Private Domestic Water Supply ¹	X	X
Industrial Water Supply	X	
Irrigation	X	X
Livestock Watering	X	X
Anadromous Fish Passage	X	X
Salmonid Fish Rearing	X	X
Salmonid Fish Spawning	X	X
Resident Fish & Aquatic Life	X	X
Wildlife & Hunting	X	X
Fishing	X	X
Boating	X	X
Water Contact Recreation	X	X
Aesthetic Quality	X	X
Hydro Power		X
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.		

SA\Table\WH5299.5

FIGURE 14

GRANDE RONDE BASIN
(340-41-722)

(Note: Basin Boundaries are as shown in figure below.)

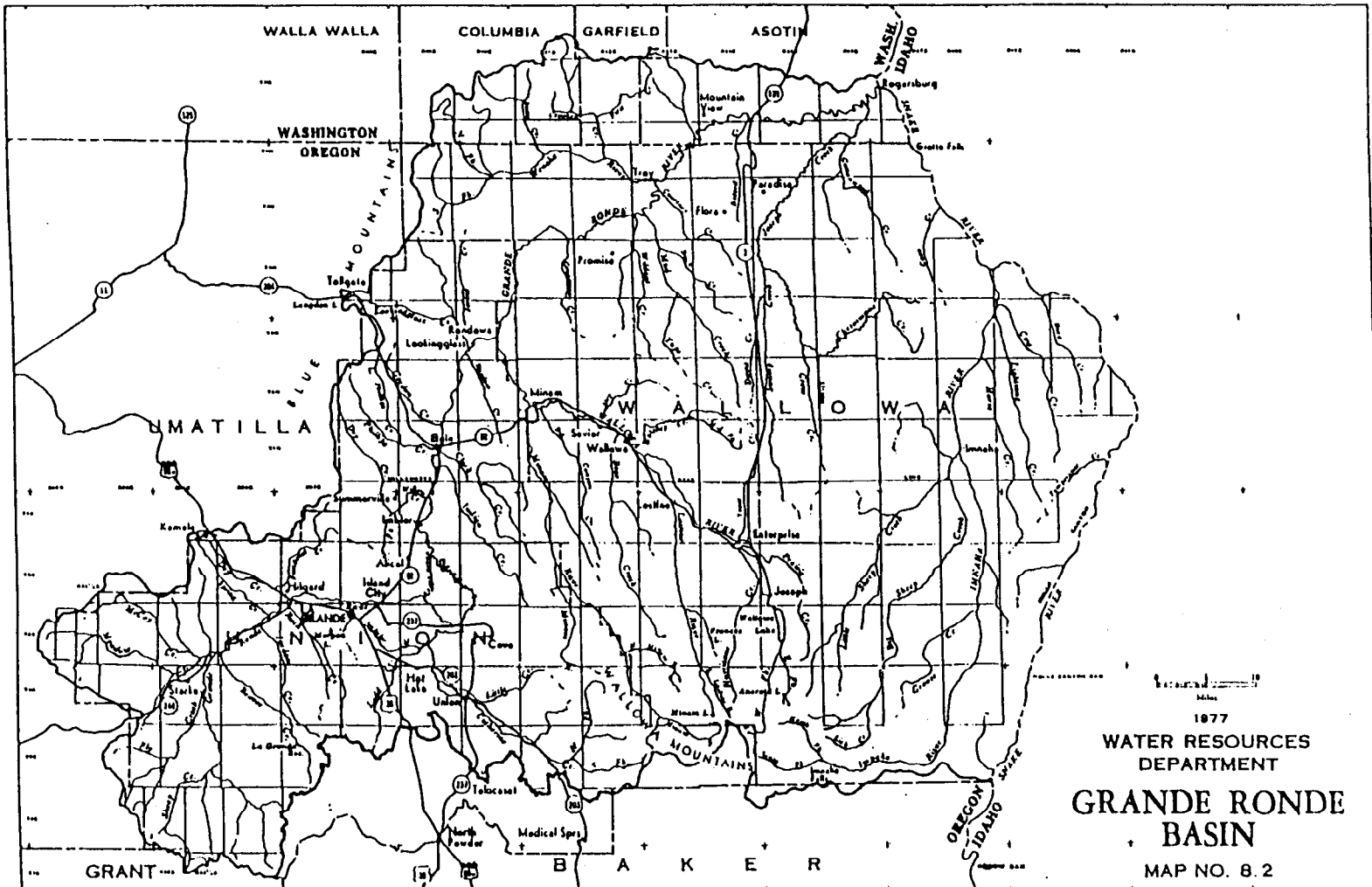


TABLE 13
GRANDE RONDE BASIN
(340-41-722)

Beneficial Uses	Main Stem Snake River (RM 176 to 260)	Main Stem Grande Ronde River (RM 39 to 165)	All Other Basin Waters
Public Domestic Water Supply ¹	X	X	X
Private Domestic Water Supply ¹	X	X	X
Industrial Water Supply	X	X	X
Irrigation	X	X	X
Livestock Watering	X	X	X
Anadromous Fish Passage	X	X	X
Salmonid Fish Rearing	X	X	X
Salmonid Fish Spawning	X	X	X
Resident Fish & Aquatic Life	X	X	X
Wildlife & Hunting	X	X	X
Fishing	X	X	X
Boating	X	X	X
Water Contact Recreation	X	X	X
Aesthetic Quality	X	X	X
Commercial Navigation & Transportation	X		
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.			

SA\Table\WH5300.5

FIGURE 15

POWDER BASIN
(340-41-762)

(Note: Basin Boundaries are as shown in figure below.)

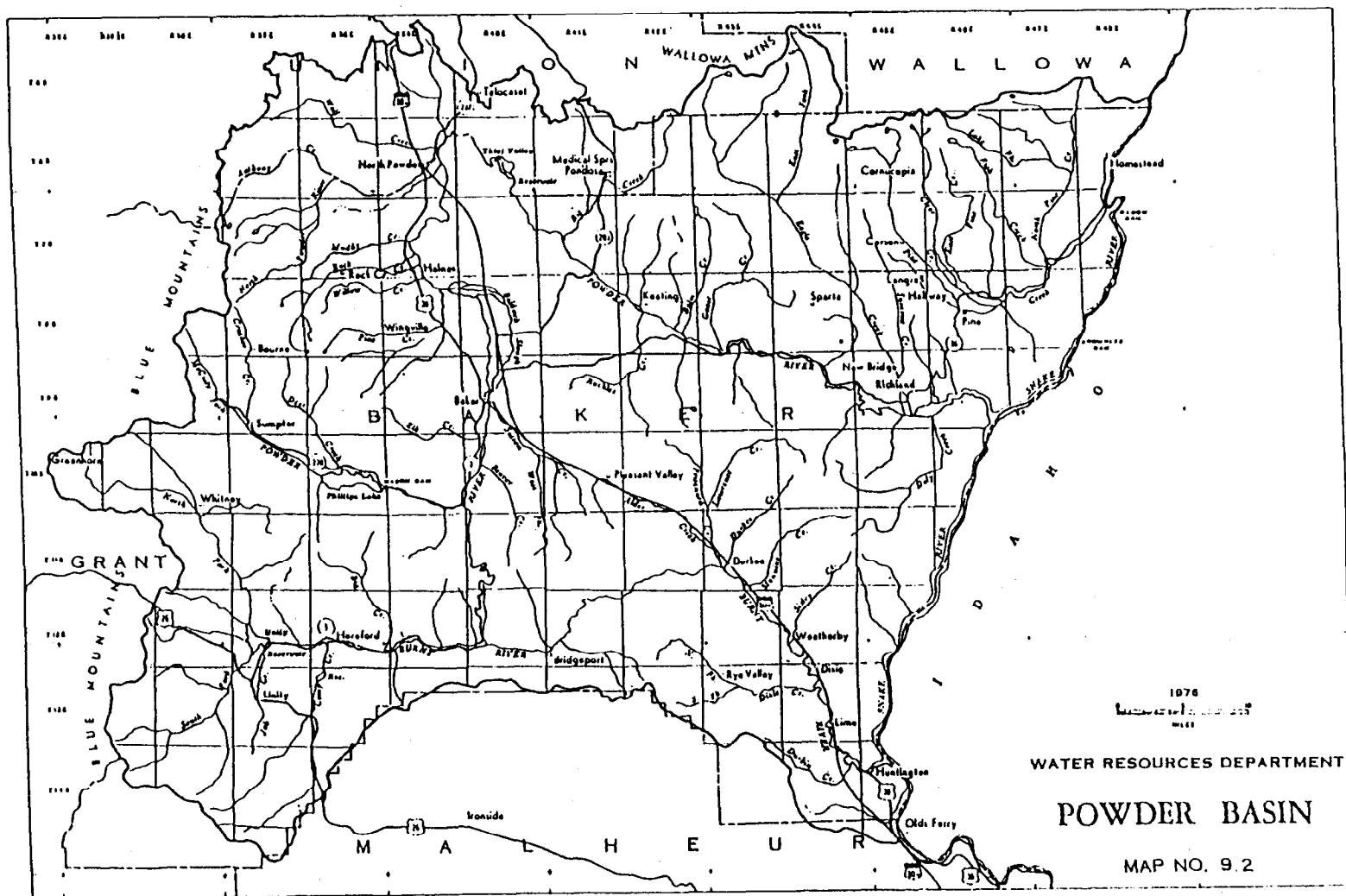


TABLE 14
POWDER BASIN
(340-41-762)

Beneficial Uses	Main Stem Snake River (RM 260 to 335)	All Other Basin Waters
Public Domestic Water Supply ¹	X	X
Private Domestic Water Supply ¹	X	X
Industrial Water Supply	X	X
Irrigation	X	X
Livestock Watering	X	X
Salmonid Fish Rearing	X	X
Salmonid Fish Spawning	X	X
Resident Fish & Aquatic Life	X	X
Wildlife & Hunting	X	X
Fishing	X	X
Boating	X	X
Water Contact Recreation	X	X
Aesthetic Quality	X	X
Hydro Power	X	
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.		

SA\Table\WH5301.5

FIGURE 16

MALHEUR RIVER BASIN
(340-41-802)

(Note: Basin Boundaries are as shown in figure below.)

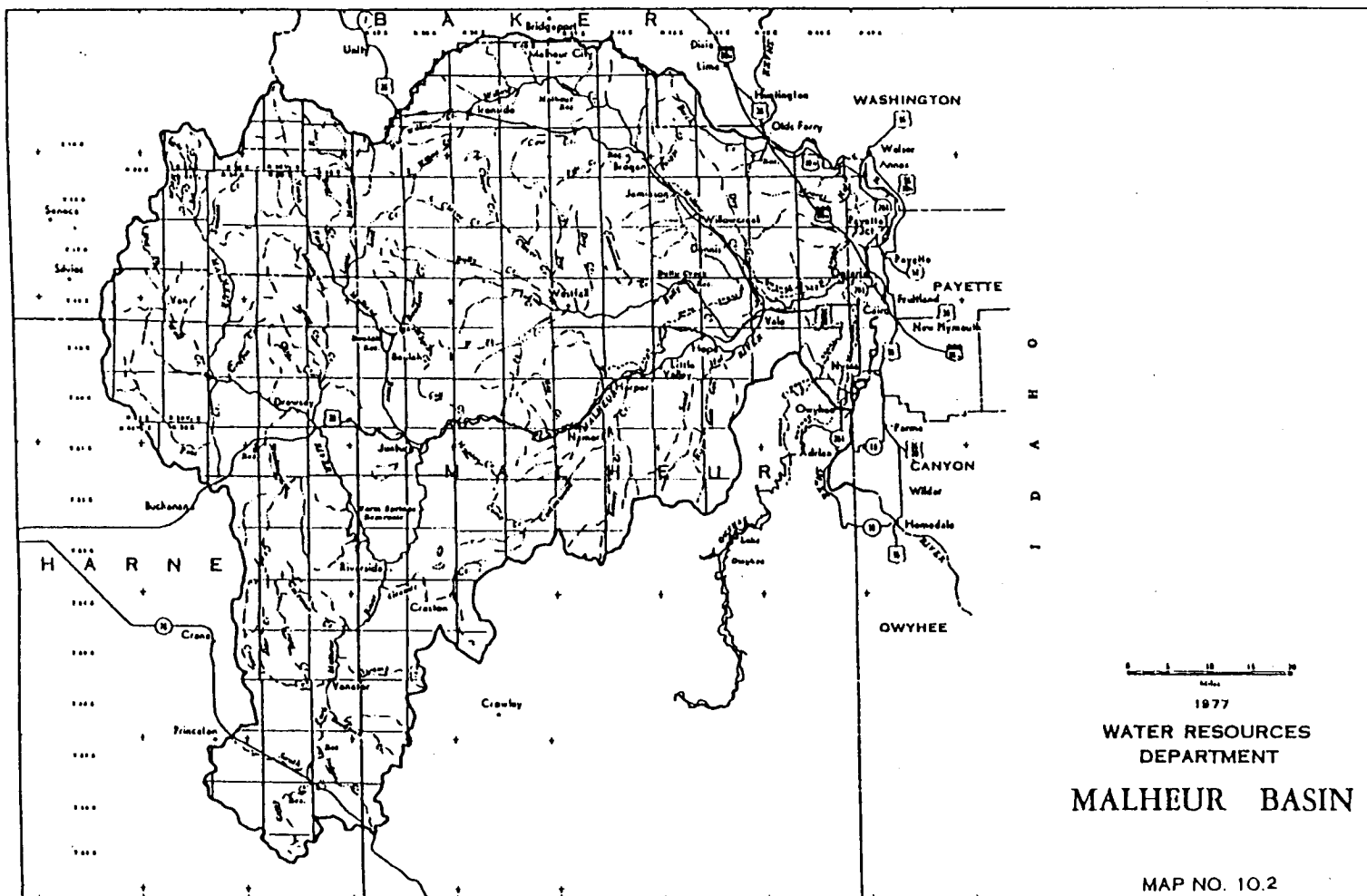


TABLE 15
MALHEUR RIVER BASIN
(340-41-802)

Beneficial Uses	Snake River Main Stem (RM 335 to 395)	Malheur River (Namorf to Mouth) Willow Creek (Brogan to Mouth) Bully Creek (Reservoir to Mouth)	Willow Creek (Malheur Reservoir to Brogan) Malheur R. (Beulah Dam & Warm Springs Dam to Namorf)	<u>Reservoirs</u> Malheur Bully Creek Beulah Warm Springs	Malheur River & Tributaries Upstream from Reservoirs
Public Domestic Water Supply ¹	X	X	X	X	X
Private Domestic Water Supply ¹	X	X	X	X	X
Industrial Water Supply	X	X	X	X	X
Irrigation	X	X	X	X	X
Livestock Watering	X	X	X	X	X
Salmonid Fish Rearing (trout)	X		X	X	X
Salmonid Fish Spawning (trout)	X		X		X
Resident Fish (Warm Water) & Aquatic Life	X	X	X	X	X
Wildlife & Hunting	X	X	X	X	X
Fishing	X	X	X	X	X
Boating	X	X	X	X	X
Water Contact Recreation	X	X	X	X	X
Aesthetic Quality	X	X	X	X	X
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.					

SA\Table\WH5302.5

FIGURE 17

OWYHEE BASIN
(340-41-842)

(Note: Basin Boundaries are as shown in figure below.)

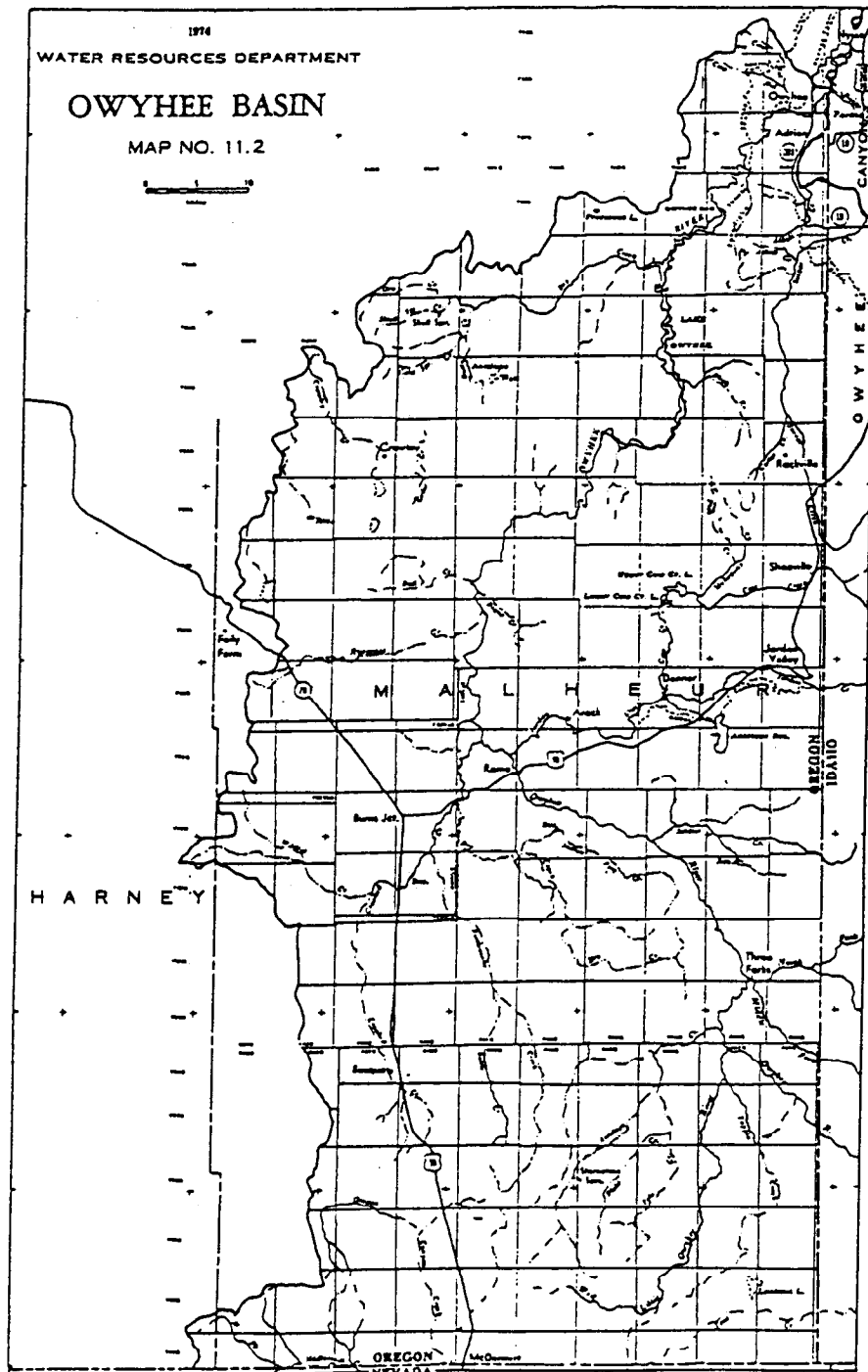


TABLE 16
OWYHEE BASIN
(340-41-842)

Beneficial Uses	Snake River (RM 295 — 409)	Owyhee River (RM 0 — 18)	Owyhee River (RM 18 — Dam)	<u>Reservoirs</u> Antelope Cow Creek Owyhee	Owyhee River & Tributaries Upstream from Owyhee Reservoir	Designated Scenic Waterway ²
Public Domestic Water Supply ¹	X	X	X	X	X	X
Private Domestic Water Supply ¹	X	X	X	X	X	X
Industrial Water Supply	X	X	X	X	X	
Irrigation	X	X	X	X	X	
Livestock Watering	X	X	X	X	X	X
Salmonid Fish Rearing (Trout)	X		X	X	X	X
Salmonid Fish Spawning (Trout)	X		X		X	X
Resident Fish (Warm Water) & Aquatic Life	X	X	X	X	X	X
Wildlife & Hunting	X	X	X	X	X	X
Fishing	X	X	X	X	X	X
Boating	X	X	X	X	X	X
Water Contact Recreation	X	X	X	X	X	X
Aesthetic Quality	X	X	X	X	X	X
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards. ² The mainstem of the South Fork of the Owyhee River from the Oregon — Idaho River border to Three Forks (the confluence of the North, Middle and South Forks Owyhee River) and the mainstem Owyhee River from Crooked Creek (river mile 22) to the mouth of Birch Creek (river mile 76) is designated by statute as a Scenic Waterway.						

SA\Table\WH5303.5

FIGURE 18

**MALHEUR LAKE BASIN
(340-41-882)**

(Note: Basin Boundaries are as shown in figure below.)

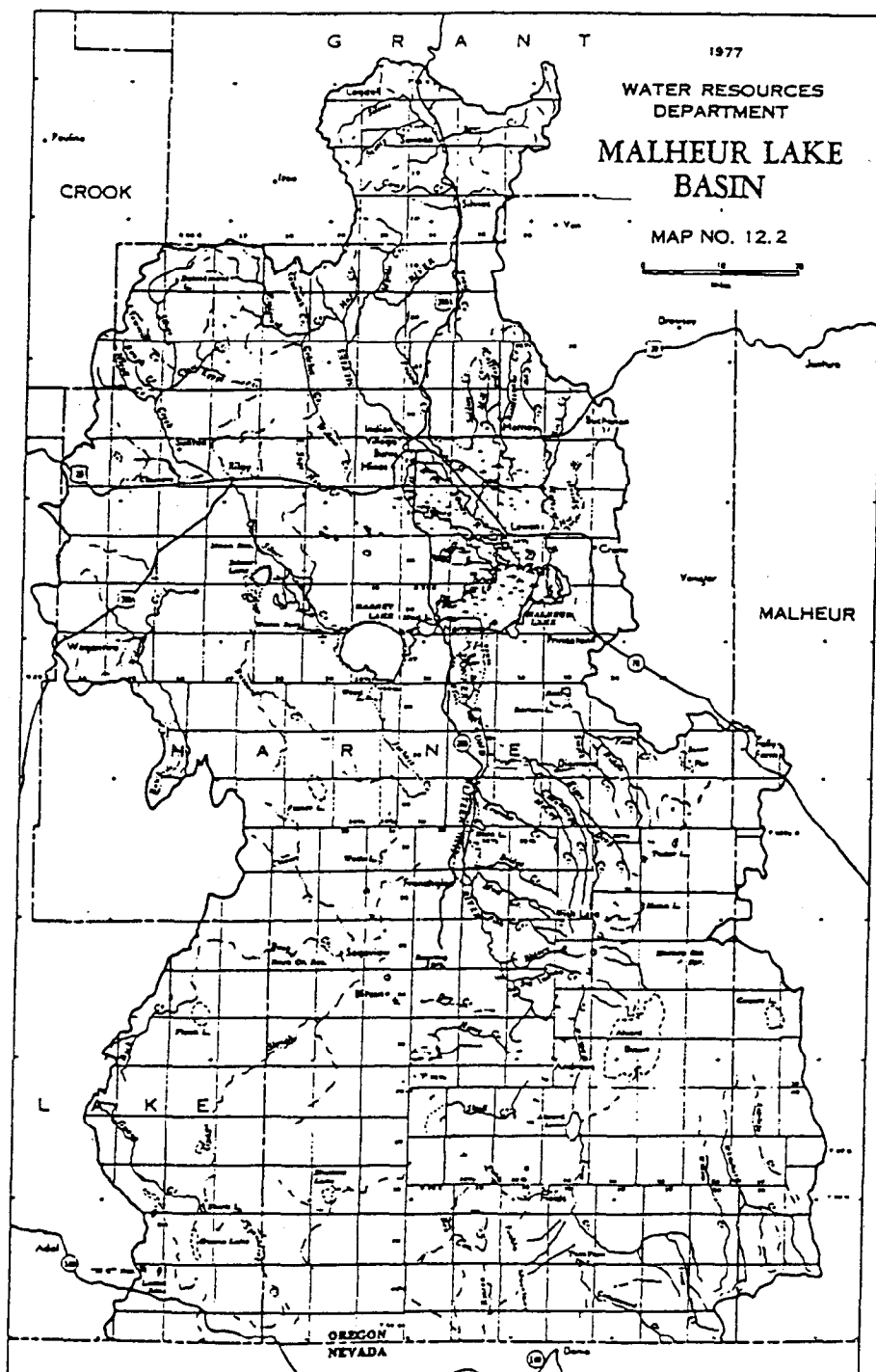


TABLE 17
MALHEUR LAKE BASIN
(340-41-882)

Beneficial Uses	Natural Lakes	All Rivers & Tributaries
Public Domestic Water Supply ¹		X
Private Domestic Water Supply ¹		X
Industrial Water Supply		X
Irrigation	X	X
Livestock Watering	X	X
Salmonid Fish Rearing (Trout)		X
Salmonid Fish Spawning (Trout)		X
Resident Fish & Aquatic Life	X	X
Wildlife & Hunting	X	X
Fishing	X	X
Boating	X	X
Water Contact Recreation	X	X
Aesthetic Quality	X	X
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.		

SA\Table\WH5304.5

FIGURE 19

GOOSE & SUMMER LAKES BASIN
(340-41-922)

(Note: Basin Boundaries are as shown in figure below.)

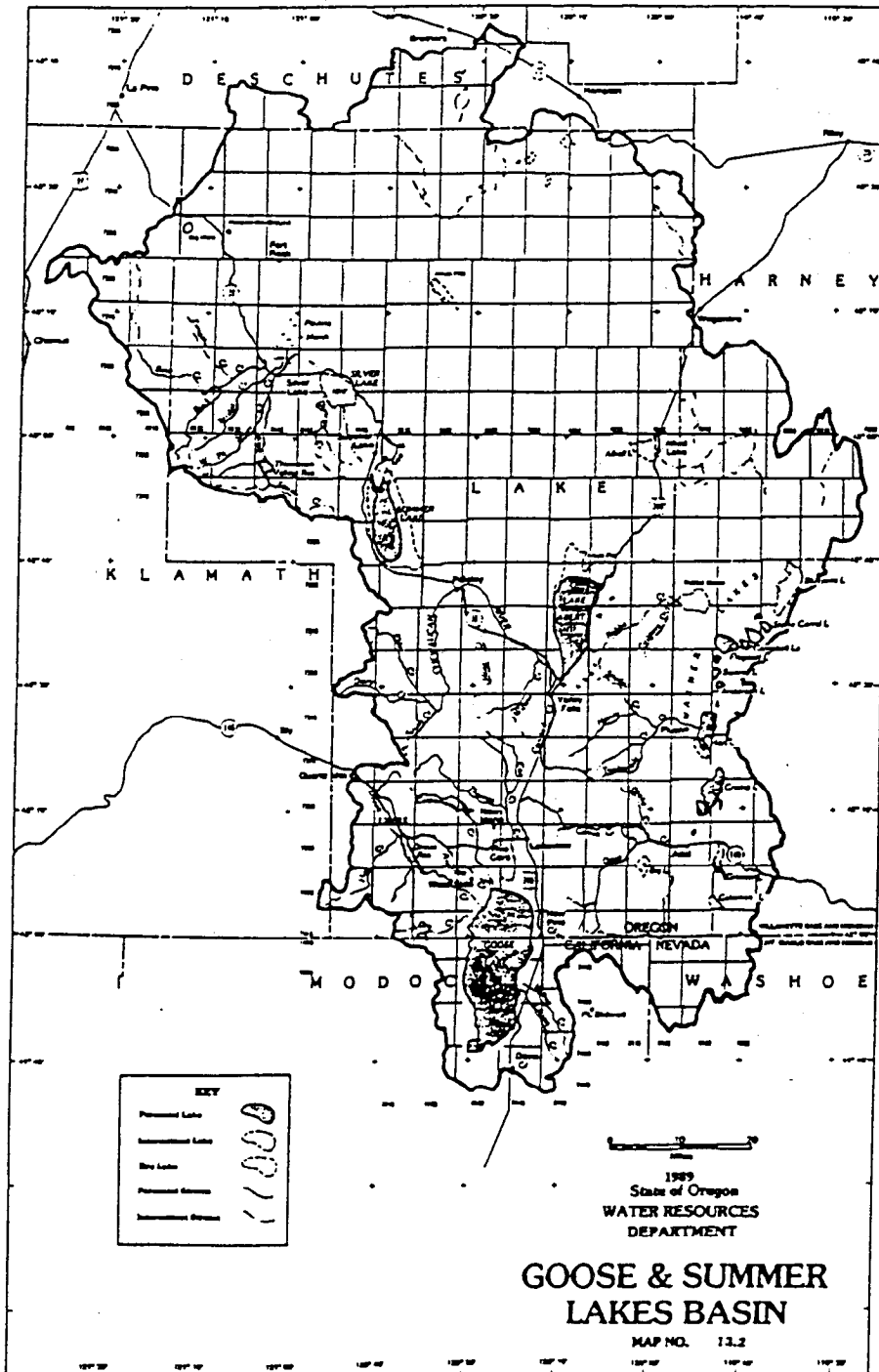


TABLE 18
GOOSE AND SUMMER LAKES BASIN
(340-41-922)

Beneficial Uses	Goose Lake	Fresh Water Lakes & Reservoirs	Highly Alkaline & Saline Lakes	Freshwater Streams
Public Domestic Water Supply ¹		X		X
Private Domestic Water Supply ¹		X		X
Industrial Water Supply		X	X	X
Irrigation		X		X
Livestock Watering	X	X		X
Salmonid Fish Rearing (Trout)	X	X		X
Salmonid Fish Spawning (Trout)		X		X
Resident Fish & Aquatic Life	X	X	X	X
Wildlife & Hunting	X	X	X	X
Fishing	X	X	X	X
Boating	X	X	X	X
Water Contact Recreation	X	X	X	X
Aesthetic Quality	X	X	X	X
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.				

SA\Table\WH5305.5

FIGURE 20

KLAMATH BASIN
(340-41-962)

(Note: Basin Boundaries are as shown in figure below.)

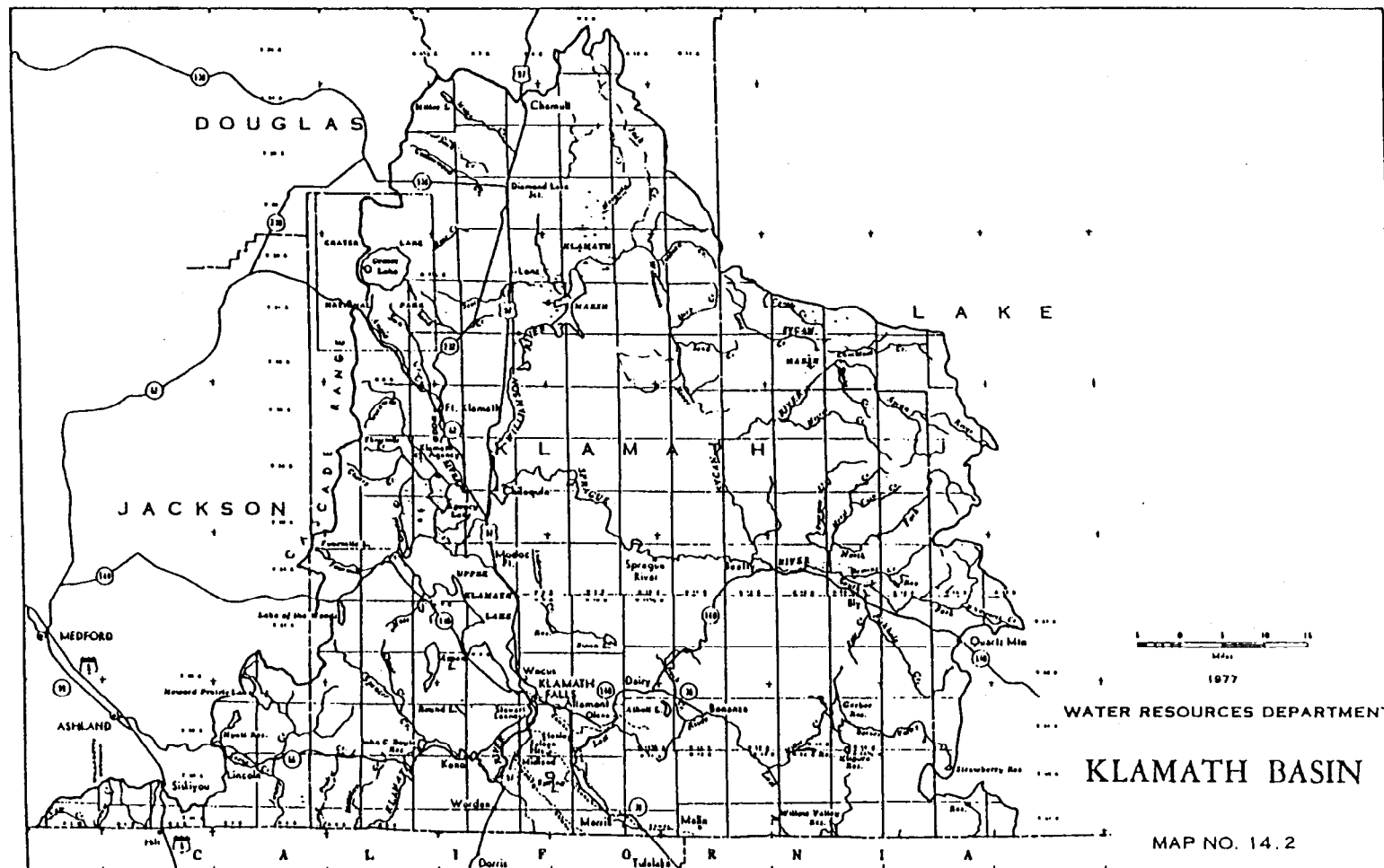


TABLE 19
KLAMATH BASIN
(340-41-962)

Beneficial Uses	Klamath River from Klamath Lake to Keno Dam (RM 255 to 232.5)	Lost River (RM 5 to 65) & Lost River Diversion Channel	All Other Basin Waters
Public Domestic Water Supply ¹	X	X	X
Private Domestic Water Supply ¹	X	X	X
Industrial Water Supply	X	X	X
Irrigation	X	X	X
Livestock Watering	X	X	X
Salmonid Fish Rearing ²			X
Salmonid Fish Spawning ²			X
Resident Fish & Aquatic Life	X	X	X
Wildlife & Hunting	X	X	X
Fishing	X	X	X
Boating	X	X	X
Water Contact Recreation	X	X	X
Aesthetic Quality	X	X	X
Hydro Power	X		
Commercial Navigation & Transportation	X		
¹ With adequate pretreatment (filtration and disinfection) and natural quality to meet drinking water standards.			
² Where natural conditions are suitable for salmonid fish use.			

SA\Table\WH5306.5

TABLE 20

WATER QUALITY CRITERIA SUMMARY (Applicable to all Basins)¹

The concentration for each compound listed in this chart is a criteria or guidance value* not to be exceeded in waters of the state for the protection of aquatic life and human health. Specific descriptions of each compound and an explanation of values are included in Quality Criteria for Water (1986). Selecting values for regulatory purposes will depend on the most sensitive beneficial use to be protected, and what level of protection is necessary for aquatic life and human health.

Compound Name (or Class)	Priority Pollutant	Carcinogen	Concentration in Micrograms Per Liter for Protection of Aquatic Life				Concentration in Units Per Liter for Protection of Human Health		
			Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria	Water and Fish Ingestion	Fish Consumption Only	Drinking Water M.C.L.
ACENAPTHENE	Y	N	*1,700.	*520.	*970.	*710.			
ACROLEIN	Y	N	*68.	*21.	*55.		320.ug	780.ug	
ACRYLONITRILE	Y	Y	*7,550.	*2,600.			0.058ug**	0.65ug**	
ALDRIN	Y	Y	3.0		1.3		0.074ng**	0.079ng**	
ALKALINITY	N	N		20,000					
AMMONIA	N	N	CRITERIA ARE pH AND TEMPERATURE DEPENDENT — SEE DOCUMENT USEPA JANUARY 1985 (Fresh Water) CRITERIA ARE pH AND TEMPERATURE DEPENDENT — SEE DOCUMENT USEPA APRIL 1989 (Marine Water)						
ANTIMONY	Y	N	*9,000.	*1,600.			146.ug	45,000.ug	
ARSENIC	Y	Y					2.2ng**	17.5ng**	0.05mg
ARSENIC (PENT)	Y	Y	*850.	*48.	*2,319.	*13.			
ARSENIC (TRI)	Y	Y	360.	190.	69.	36.			
ASBESTOS	Y	Y					30K f/L**		
BARIUM	N	N					1.mg		1.0mg
BENZENE	Y	Y	*5,300.		*5,100.	*700.	0.66ug**	40.ug**	
BENZIDINE	Y	Y	*2,500.				0.12ng	0.53ng**	
BERYLLIUM	Y	Y	*130.	*5.3			6.8ng**	117.ng**	
BHC	Y	N	*100.		*0.34				
CADMIUM	Y	N	3.9+	1.1+	43.	9.3	10.ug		0.010mg
CARBON TETRACHLORIDE	Y	Y	*35,200.		*50,000.		0.4ug**	6.94ug**	
CHLORDANE	Y	Y	2.4	0.0043	0.09	0.004	0.46ng**	0.48ng**	
CHLORIDE	N	N	860 mg/L	230 mg/L					
CHLORINATED BENZENES	Y	Y	*250	*50.	*160.	*129.	488.ug		
CHLORINATED NAPHTHALENES	Y	N	*1,600.		*7.5				
CHLORINE	N	N	19.	11.	13.	7.5			
CHLOROALKYL ETHERS	Y	N	*238,000.						
CHLOROETHYL ETHER (BIS-2)	Y	Y					0.03ug	1.36ug**	
CHLOROFORM	Y	Y	*28,900.	*1,240.			0.19ug**	15.7ug**	
CHLOROISOPROPYL ETHER (BIS-2)	Y	N					34.7ug	4.36mg	

TABLE 20

WATER QUALITY CRITERIA SUMMARY (Continued)

Compound Name (or Class)	Priority Pollutant	Carcinogen	Concentration in Micrograms Per Liter for Protection of Aquatic Life				Concentration in Units Per Liter for Protection of Human Health		
			Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria	Water and Fish Ingestion	Fish Consumption Only	Drinking Water M.C.L.
CHLOROMETHYL ETHER (BIS)	N	Y					0.00000376ng**	0.00184ug**	
CHLOROPHENOL 2	Y	N	*4,380.	*2,000.					
CHLOROPHENOL 4	N	N			*29,700.				
CHLOROPHENOXY HERBICIDES (2,4,5-TP)	N	N					10.ug		
CHLOROPHENOXY HERBICIDES (2,4-D)	N	N					100.ug		
CHLORPYRIFOS	N	N	0.083	0.041	0.011	0.0056			
CHLORO-4 METHYL-3 PHENOL	N	N	*30.						
CHROMIUM (HEX)	Y	N	16.	11.	1,100	50.	50.ug		0.05mg
CHROMIUM (TRI)	N	N	1,700.+	210.+	*10,300		170.mg	3,433.mg	0.05mg
COPPER	Y	N	18.+	12.+	2.9	2.9			
CYANIDE	Y	N	22.	5.2	1.	1.	200.ug		
DDT	Y	Y	1.1	0.001	0.13	0.001	0.024ng**	0.024ng**	
DDT METABOLITE (DDE)	Y	Y	*1,050.		*14.				
DDT METABOLITE (TDE)	Y	Y	*0.06		*3.6				
DEMETON	Y	N		0.1		0.1			
DIBUTYLPHTHALATE	Y	N					35.mg	154.mg	
DICHLOROBENZENES	Y	N	*1,120.	*763.	*1,970.		400.ug	2.6mg	
DICHLOROBENZIDINE	Y	Y					0.01ug**	0.020ug**	
DICHLOROETHANE 1,2	Y	Y	*118,000.	*20,000.	*113,000.		0.94ug**	243.ug**	
DICHLOROETHYLENES	Y	Y	*11,600.		*224,000.		0.033ug**	1.85ug**	
DICHLOROPHENOL 2,4	N	N	*2,020.	*365.			3.09mg		
DICHLOROPROPANE	Y	N	*23,000.	*5,700.	*10,300.	*3,040.			
DICHLOROPROPENE	Y	N	*6,060.	*244.	*790.		87.ug	14.1mg	
DIELDRIN	Y	Y	2.5	0.0019	0.71	.0019	0.071ng**	0.076ng**	
DIETHYLPHTHALATE	Y	N					350.mg	1.8g	
DIMETHYL PHENOL 2,4	Y	N	*2,120.						
DIMETHYL PHTHALATE	Y	N					313.mg	2.9g	
DINITROTOLUENE 2,4	N	Y					0.11ug**	9.1ug**	
DINITROTOLUENE	Y	N					70.ug	14.3mg	
DINITROTOLUENE	N	Y	*330.	*230.	*590.	*370.			
DINITRO-O-CRESOL 2,4	Y	N					13.4g	765.ug	
DIOXIN (2,3,7,8-TCDD)	Y	Y	*0.01	*38 pg/L			0.000013ng**	0.000014ng**	
DIPHENYLHYDRAZINE	Y	N					42.ng**	0.56ug**	

TABLE 20

WATER QUALITY CRITERIA SUMMARY (Continued)

Compound Name (or Class)	Priority Pollutant	Carcinogen	Concentration in Micrograms Per Liter for Protection of Aquatic Life				Concentration in Units Per Liter for Protection of Human Health		
			Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria	Water and Fish Ingestion	Fish Consumption Only	Drinking Water M.C.L.
DIPHENYLHYDRAZINE1,2	Y	N	*270.						
DI-2-ETHYLHEXYL PHTHALATE	Y	N					15.mg	50.mg	
ENDOSULFAN	Y	N	0.22	0.056	0.034	0.0087	74.ug	159.ug	
ENDRIN	Y	N	0.18	0.0023	0.037	0.0023	1.ug		0.0002mg
ETHYLBENZENE	Y	N	*32,000.		*430.		1.4mg	3.28mg	
FLUORANTHENE	Y	N	*3,980.		*40.	*16.	42.ug	54.ug	
GUTHION	N	N		0.01		0.01			
HALOETHERS	Y	N	*360.	*122.					
HALOMETHANES	Y	Y	*11,000.		*12,000.	*6,400.	0.19ug**	15.7ug**	
HEPTACHLOR	Y	Y	0.52	0.0038	0.053	0.0036	0.28ng**	0.29ng**	
HEXACHLOROETHANE	N	Y	*980.	*540.	*940.		1.9ug	8.74ug	
HEXACHLOROBENZENE	Y	N					0.72ng**	0.74ng**	
HEXACHLOROBUTADIENE	Y	Y	*90.	*9.3	*32.		0.45ug**	50.ug**	
HEXACHLOROCYCLOHEXANE (LINDANE)	Y	Y	2.0	0.08	0.16				0.004mg
HEXACHLOROCYCLOHEXANE-ALPHA	Y	Y					9.2ng**	31.ug**	
HEXACHLOROCYCLOHEXANE-BETA	Y	Y					16.3ng**	54.7ng**	
HEXACHLOROCYCLOHEXANE-GAMA	Y	Y					18.6ng**	62.5ng**	
HEXACHLOROCYCLOHEXANE-TECHNICAL	Y	Y					12.3ng**	41.4ng**	
HEXACHLOROCYCLOPENTADIENE	Y	N	*7.	*5.2	*7.		206.ug		
IRON	N	N		1,000.			0.3mg		
ISOPHORONE	Y	N	*117,000.		*12,900.		5.2mg	520.mg	
LEAD	Y	N	82.+	3.2+	140.	5.6	50.ug		0.05mg
MALATHION	N	N		0.1		0.1			
MANGANESE	N	N					50.ug	100.ug	
MERCURY	Y	N	2.4	0.012	2.1	0.025	144.ng	146.ng	0.002mg
METHOXYCHLOR	N	N		0.03		0.03	100.ug		0.1mg
MIREX	N	N		0.001		0.001			
MONOCHLOROBENZENE	Y	N					488.ug		
NAPHTHALENE	Y	N	*2,300.	*620.	*2,350.				
NICKEL	Y	N	1,400.+	160+	75	8.3	13.4ug	100.ug	
NITRATES	N	N					10.mg		10.mg
NITROBENZENE	Y	N	*27,000.		*6,680.		19.8mg		
NITROPHENOLS	Y	N	*230.	*150.	*4,850.				

TABLE 20

WATER QUALITY CRITERIA SUMMARY (Continued)

Compound Name (or Class)	Priority Pollutant	Carcinogen	Concentration in Micrograms Per Liter for Protection of Aquatic Life				Concentration in Units Per Liter for Protection of Human Health		
			Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria	Water and Fish Ingestion	Fish Consumption Only	Drinking Water M.C.L.
NITROSAMINES	Y	Y	*5,850.		*3,300,000		0.8ng**	1,240.ng**	
NITROSODIBUTYLAMINE N	Y	Y					6.4ng**	587.ng**	
NITROSODIETHYLAMINE N	Y	Y					0.8ng**	1,240.ng**	
NITROSODIMETHYLAMINE N	Y	Y					1.4ng**	16,000.ng**	
NITROSODIPIHENYLAMINE N	Y	Y					4,900.ng**	16,100.ng**	
NITROSOPYRROLIDINE N	Y	Y					16.ng**	91,900.ng**	
PARATHION	N	N	0.065	0.013					
PCB's	Y	Y	2.0	0.014	10.	0.03	0.079ng**	0.079ng**	
PENTACHLORINATED ETHANES	N	N	*7,240.	*1,100.	*390.	*281.			
PENTACHLOROBENZENE	N	N					74.ug	85.ug	
PENTACHLOROPHENOL	Y	N	***20.	***13.	13.	*7.9	1.01mg		
PHENOL	Y	N	*10,200.	*2,560.	*5,800.		3.5mg		
PHOSPHORUS ELEMENTAL	N	N				0.1			
PHTHALATE ESTERS	Y	N	*940.	*3.	*2,944.	*3.4			
POLYNUCLEAR AROMATIC HYDROCARBONS	Y	Y			*300.		2.8ng**	31.1ng**	
SELENIUM	Y	N	260.	35.	410.	54.	10.ug		0.01mg
SILVER	Y	N	4.1+	0.12	2.3		50.ug		0.05mg
SULFIDE-HYDROGEN SULFIDE	N	N		2.		2.			
TETRACHLORINATED ETHANES	Y	N	*9,320.						
TETRACHLOROBENZENE 1,2,4,5	Y	N					38.ug	48.ug	
TETRACHLOROETHANE 1,1,2,2	Y	Y		*2,400.	*9,020.		0.17ug**	10.7ug**	
TETRACHLOROETHANES	Y	N	*9,320.						
TETRACHLOROETHYLENE	Y	Y	*5,280.	*840.	*10,200.	*450.	0.8ug**	8.85ug**	
TETRACHLOROPHENOL 2,3,5,6	Y	N				*440.			
THALLIUM	Y	N	*1,400.	*40.	*2,130.		13.ug	48.ug	
TOLUENE	Y	N	*17,500.		*6,300.	*5,000.	14.3mg	424.mg	
TOXAPHENE	Y	Y	0.73	0.0002	0.21	0.0002	0.71ng**	0.73ng**	0.005mg
TRICHLORINATED ETHANES	Y	Y	*18,000.						
TRICHLOROETHANE 1,1,1	Y	N			*31,2000.		18.4mg	1.03g	
TRICHLOROETHANE 1,1,2	Y	Y		*9,400.			0.6ug**	41.8ug**	
TRICHLOROETHYLENE	Y	Y	*45,000.	*21,900.	*2,000.		2.7ug**	80.7ug**	
TRICHLOROPHENOL 2,4,5	N	N					2,600.ug		
TRICHLOROPHENOL 2,4,6	Y	Y		*970.			1.2ug**	3.6ug**	

TABLE 20

WATER QUALITY CRITERIA SUMMARY (Continued)

Compound Name (or Class)	Priority Pollutant	Carcinogen	Concentration in Micrograms Per Liter for Protection of Aquatic Life				Concentration in Units Per Liter for Protection of Human Health		
			Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria	Water and Fish Ingestion	Fish Consumption Only	Drinking Water M.C.L.
VINYL CHLORIDE	Y	Y					2.ug**	525.ug**	
ZINC	Y	N	120.+	110+	95	86			

MEANING OF SYMBOLS:

g = grams
 mg = milligrams
 ug = micrograms
 ng = nanograms
 pg = picograms
 f = fibers
 Y = Yes
 N = No

M.C.L. = Maximum Contaminant Level.

+ = Hardness Dependent Criteria (100 mg/L used).

* = Insufficient data to develop criteria; value presented is the L.O.E.L. — Lowest Observed Effect Level.

** = Human health criteria for carcinogens reported for three risk levels. Value presented is the 10-6 risk level, which means the probability of one concern case per one million people at the stated concentration.

*** = pH Dependent Criteria (7.8 pH used).

1 — Values in Table 20 are applicable to all basins as follows:

Basin	Rule	Basin	Rule
North Coast	340-41-205(p)	Umatilla	340-41-645(p)
Mid Coast	340-41-245(p)	Walla Walla	340-41-685(p)
Umpqua	340-41-285(p)	Grande Ronde	340-41-725(p)
South Coast	340-41-325(p)	Powder	340-41-765(p)
Rogue	340-41-365(p)	Malheur River	340-41-805(p)
Willamette	340-41-445(p)	Owyhee	340-41-845(p)
Sandy	340-41-485(p)	Malheur Lake	340-41-885(p)
Hood	340-41-525(p)	Goose & Summer Lakes	340-41-925(p)
Deschutes	340-41-565(p)	Klamath	340-41-965(p)
John Day	340-41-605(p)		

Water and Fish Ingestion

Values represent the maximum ambient water concentration for consumption of both contaminated water and fish or other aquatic organisms.

Fish Ingestion

Values represent the maximum ambient water concentration for consumption of fish or other aquatic organisms.